

1999 Annual Review and Forecast of

UTAH COAL

Production and Distribution

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Executive Summary

While the U.S.'s 1999, coal production was the second highest ever, Utah fell short of its all-time high set two years earlier by about half a million tons, and only slightly less than the previous year. The U.S. produced 1.094 billion tons of coal, the sixth consecutive year that production exceeded the one-billion-ton mark. Utah produced 26.5 million tons of coal which was the third highest production level ever. The U.S. exported 58.5 million tons of coal in 1999, which was lower than the previous fifteen years, while Utah exports were lower than the previous five years' and came in at 2.6 million tons. The value of coal produced in Utah was \$460 million in 1999.

Utah distributed 26.2 million tons of coal in 1999, the third highest ever. Electric utility consumption outside of Utah contributed significantly to this decreased distribution, by more than one million tons, while exports, industrial consumption outside of Utah and residential/commercial in Utah decreased by lesser amounts. During 2000, production should decrease to 25.9 million tons. This is the level at which Utah coal production should stay within the next 5 years.

Utah's coal mines remain the most productive underground mines in the U.S. Productivity at just under two tons per miner-hour (tpmh) in 1980 and 1981, has been on

the rise ever since, reaching new highs almost every year. In 1996 Utah's mines failed to achieve a new record partly because of the start-up and development of the Willow Creek mine. In addition, production per miner hour in 1997 fell below that of 1996's due to other difficulties encountered in the Willow Creek mine and the shortage in the rail transportation system. During 1999 Utah achieved the third highest productivity with 6.09 tpmh, a figure only exceeded in 1995 and 1998. Of note, the industry expects another productivity record in 2000.

Utah's high productivity is largely credited to excellent management, a capable engineering and geological staff, a high degree of mechanization, and a highly skilled workforce. These factors, in conjunction with high seam thickness and favorable geology, have led to more competitive coal prices for Utah coal which, in turn, have enhanced and guaranteed the success of the state's coal industry.

Electric utilities consumed the bulk of Utah's coal production. The Hunter, Huntington and Carbon plants of PacifiCorp's Utah Power and Light (UP&L), Intermountain Power Agency's (IPA) Intermountain Power Plant (IPP) and the Bonanza plant of Deseret Generation and Transmission (DG&T) for part of

its generation, purchased 13.2 million tons and consumed 13.0 million tons in 1999. Together these five plants purchased about half of all Utah production, making the electric utility sector the state's best coal customer. Bonanza plant consumed 1.43 million tons of Colorado coal along with 167,000 tons of Utah coal for its generation. Also in 1999, electric utilities and cogeneration plants outside of Utah consumed 6.9 million tons of Utah coal. Altogether, electric utilities consumed 75.8 percent of the coal produced in Utah. Including those volumes exported to the Pacific Rim (Japan, Korea, and Taiwan), electric utilities consumed 85.5 percent of all the coal produced in Utah.

In 1999, industrial coal consumption was Utah's second largest consuming sector (3.36 million tons). Kennecott consumed a little more than half of the 0.83 million tons of Utah's industrial coal production. Geneva Steel and various cement and lime plants in Utah consumed the remaining half. Out-of-state industrial consumption amounted to 2.53 million tons in 1999 and was used primarily by chemical and cement plants in California and cement plants in Nevada. About 0.32 million tons went to the other mountain states. The third consuming sector was exports to the Pacific Rim (2.57 million tons). Far

1999 Utah Coal Production

behind the exports, residential and commercial customers consumed almost 0.2 million tons of Utah coal.

Production of coal in Utah approached 26.5 million tons, the third highest production level in 130 years, exceeded only by the 1996 and 1998 levels of 27.1 and 26.6 million tons respectively. Gross production topped 26,534,000 tons and net production came in at 26,491,000 tons (See Appendix, Tables 1 and 2).

MINER PRODUCTIVITY

Production in 1999 decreased from 1998 levels by 0.4 percent and employment decreased by more than 5.5 percent, which caused productivity per miner per year and per day to rise. Miner productivity increased from 13,641 tons per year in 1998 to 14,374 tons per year in 1999. The number of days worked per year rose from 247.8 to 259.7, still coal production per miner per day rose from 55.1 tons to 55.4 tons. Productivity per miner hour decreased slightly from the presently adjusted figure of 6.12 tons per miner hour to 6.09. This decrease could be explained by Cyprus Plateau trying to streamline its production at the Willow Creek mine.

During 1999, a total of 1,843 miners produced 26,491,000 tons of coal. Working an

average of 259.7 days per year (478,522 miner days), miners produced an average of 6.09 tons per hour (See Appendix, Table 1).

MAJOR COAL FIELDS

Again, the Wasatch Plateau

coal field was the major coal producer in 1999 (See Appendix, Maps 1 and 2). More than 89 percent of Utah's 1999 coal production (23.6 million tons) came from this field while the Book Cliffs accounted for the remaining 11 percent (2.9 million tons). The Emery coal

Utah Coal Industry Production, Employment, Productivity and Prices

	Production Million Short Tons	Employment No. of Employees	Productivity Tons/Miner Hour	Prices \$/Ton
1981	13.80	4,166	1.99	26.87
1982	16.91	4,296	2.05	29.42
1983	11.82	2,707	2.59	28.32
1984	12.25	2,525	2.94	29.20
1985	12.83	2,563	2.80	27.69
1986	14.26	2,881	3.08	27.64
1987	16.52	2,650	3.25	25.67
1988	18.16	2,559	3.69	22.85
1989	20.51	2,471	4.42	22.01
1990	22.01	2,791	4.10	21.78
1991	21.87	2,292	4.79	21.56
1992	21.02	2,106	5.13	21.83
1993	21.72	2,161	5.47	21.17
1994	24.44	2,024	6.01	20.07
1995	25.05	1,989	6.41	19.11
1996	27.07	2,077	5.91	18.50
1997	26.43	2,091	5.57	18.34
1998	26.60	1,950	6.19	17.83
1999	26.49	1,843	6.09	17.36
2000	25.85	1,748	6.19	17.57

2000 values are forecast

field, the only other significant producer in recent years, produced no coal between 1992 and 1999. During 2000, the Wasatch Plateau coal field is expected to produce 22.7 million tons, representing 88 percent of total production. In contrast, about 3.1 million tons or 12 percent of Utah's coal production is expected to come from the Book Cliffs coal field. For the ninth year in a row, no production is likely from the Emery coal field (See Appendix, Table 3).

COAL PRODUCTION BY COUNTY

On a county basis, during the 1960s and 1970s Carbon produced much more than Emery with Sevier producing small amounts. During the last decade (1980s) coal production from Emery surpassed that of Carbon with Sevier showing a significant gain. During this decade Emery's production at times was two to three times as much as Carbon with Sevier gaining on Carbon.

Skyline mine, which is now owned by Canyon Fuel Corp., and Starpoint mine of Cyprus Plateau shifted production from leases in Carbon to those in Emery County. The balance of coal production by county shifted dramatically from Carbon to Emery since these two mines combined accounted, at the time, for about 27 percent of Utah's total coal production. The actual shift by both mines started in 1991, became more

pronounced in 1992, and was nearly completed in 1993 (See Appendix, Table 4). Over time, however, Skyline mine production started shifting back to Carbon County, resulting in more production from Carbon County leases than those of Emery County. Compared to the Skyline mine, the Starpoint mine shift was more accelerated, becoming even more pronounced when Cyprus Plateau moved most of its coal operation from the Starpoint mine to the Willow Creek mine, located entirely in Carbon County. Sevier county production is still increasing and

within the next two years should surpass the 6 million ton mark.

FEDERAL, STATE, AND COUNTY LANDS

Coal mined from federal leases during 1999 came in at 22.0 million tons. Its contribution as a percentage of total state production was about 10.8 percent below 1998 figures, representing a significant decrease in percent of production from federal lands. This reduction came about mainly as a result of Genwal shifting its coal production from federal leases to its state leases and partly as a result of Soldier Canyon shifting production from Soldier Canyon mine to Dugout Canyon mine. The leases for this mine were transferred from the federal government to the state in the land exchange which is described in the last section of this report.

State lands production did not reach the one-million-ton mark from 1981 to 1991. In 1992, production easily surpassed this level with 1.384 million tons of coal produced and again in 1993 with a record of 1.682 million tons of production. In 1994, production from state lands decreased to 1.227 million tons, a figure still higher than at any time in the 1980s. During 1995, production from state lands was cut to less than half of the 1994 level. In 1996 it was lower by more than 125,000 tons than in 1995, in 1997 it decreased again by 107,000 tons to a new low of 339,000 tons and, finally in 1998, it decreased by 42,000 tons to 297,000 tons..

During 1999 production from state had a significant increase. As a percentage of total production, state lands' production has historically only accounted for between 1 to 5 percent, which increased to above 6 and 7 percent in 1992 and 1993; in 1994, it fell back to 5 percent; in 1995 to 2.3 percent; in 1996 to 1.6 percent; in 1997 to 1.3 percent; and in 1998, to 1.1 percent which was the lowest percentage production level in more than two decades. This percentage production as well as tons of production increased ten fold in 1999 as Soldier Canyon shifted nearly all of its production from Soldier Canyon mine to Dugout Canyon mine and the Crandall Canyon mine of Genwal shifted 60 percent of its production from federal leases into the state leases.

Production from county lands has always been minimal and erratic. During 1999, county-owned lands produced only 65,000 tons.

FEE LANDS

For the first time in a decade, coal production from fee lands slipped below 2 million tons (1.735 million tons) in 1992. In 1993, production decreased again by 50 percent to 826,000 tons, dropping further in 1994 to 415,000 tons or 1.7 percent of total production. In 1995 production moved up by 11 percent to 461,000 tons or 1.8 percent of total production, in 1996, fee lands came in at 614,000 tons

or 2.3 percent of total production and again in 1997 there was a further increase to 928,000 tons or 3.5 percent of total production. In 1998, production from fee lands went up to 4.9 percent and during 1999 there was a further increase to 5.2 percent of the total production while, on a tonnage basis, production increased by more than 41 percent (from 928,000 to 1.312 million tons) in 1998 and during 1999 a further increase to 1.373 million tons was registered. By contrast, coal produced from fee lands in 1983 represented almost 40 percent of total production (See Appendix,

Table 5).

LONGWALL PANELS AND CONTINUOUS MINERS

During 1999, seven operating longwall panels accounted for 74 percent of production or 19.5 million tons. This amounted to an average of more than 2.79 million tons of coal production per panel per year. Twenty-five continuous miners produced a total of 6.96 million tons of coal for an average of 278,360 tons per machine per year. In recent years, however, some machines have produced between 400,000 to nearly 600,000 tons per year.

Utah Coal Markets: Distribution of Utah Coal

Distribution of Utah coal, which from 1990 to 1993 had been relatively unchanged and remained within 1 percent of 21.6 million tons, jumped by 6.9 percent in 1994 from 1993 levels. Between 1994 and 1995, distribution increased by 8.5 percent and increased another 9.3 percent by 1996. In 1997 however, distribution fell back to the 1995 level, but increased again to the second highest distribution in 1998. Distribution of coal hit an all-time high of 23.44 million tons in 1994 and set yet another record of 25.44 million tons in 1995, but 1996 distribution surpassed these levels with 27.82 million tons, an increase of more than two million tons, however, in 1997 it fell back to 25.41 million tons and stood at 26.97 million tons in 1998.

During 1999 distribution passed all previous records, with the exception of 1996 and 1998 and stood at 26.18 million tons. Distribution of Utah coal to consumers in Utah reached 14.1 million tons, surpassing all other Utah coal consumption in the 130 years of Utah's coal industry. Distribution to consumers in other states totaled 9.5 million tons, about 1.0 million tons less than in 1998, while overseas exports amounted to 2.6 million tons, about 0.17 million tons less than the 1998 export level.

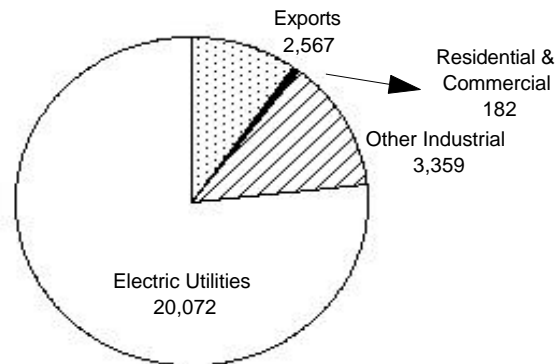
ELECTRIC UTILITY MARKETS

Over two decades ago, electric utility consumption of coal surpassed the combined consumption levels of industrial coal and coke plant coal and became the top market for Utah coal operators. Today about 75.8 percent of Utah's coal production is consumed to generate electricity in Utah and

decrease of 0.8 million tons from the previous year's level.

About 64.3 percent of this shipment went to coal-fired power plants and cogeneration facilities in Nevada and California. Tennessee and Illinois received the lion's share of Utah's electric utility coal to the east. Canyon Fuel was the major shipper to Illinois with small amounts from White Oak while Genwal, White Oak and

1999 Distribution of Utah Coal by Consuming Sector



Thousand Short Tons

other states. Including exports, about 85.5 percent of Utah's coal production is consumed to generate electricity. Which amounts to 86.5 percent of Utah's total coal distribution.

Out-of-State Markets

Distribution of Utah coal to out-of-state markets during 1999 decreased by about 13 percent from the 1998 level. Utah shipped a total of 6.9 million tons to out-of-state electric utility and cogeneration customers¹, a

Co-op supplied the entirety of the shipments to Tennessee mostly in compliance with the contract detailed in the 1994 Coal Report. The total shipment to these two states decreased

¹ Editor's Note: The Energy Information Administration, in adhering to a more restricted definition of "electric utility" and "other industrial" coal consumption, classifies cogeneration consumption under the definition of "other industrial" coal. For purposes of this report, coal shipped for consumption to cogeneration facilities is considered "electric utility" consumption, since its main purpose is to generate electricity for sale.

by one million tons from 1996 levels (See Appendix, Table 6).

Distribution to Nevada

In Nevada, four electric power generation facilities burn bituminous or subbituminous coal. Three of these plants, Nevada Power Company's Reid Gardner plant, Sierra Pacific Power Company's North Valmy plant, and Pinon Pine Power plant, burn Utah coal.

In 1999, the Reid Gardner plant, rated at 636 megawatts (MW), purchased a total of 1.94 million tons and burned 1.74 million tons for a net generation of 3,744 gigawatt hours (GWh) of electricity. Of note, all of the coal purchased by the Reid Gardner plant came from Utah.

Before 1993, Reid Gardner's four units relied almost entirely on Utah coal. One of Nevada Power's four major contracts with Utah coal producers was with ARCO, which originally supplied the coal from its Gordon Creek mines and, later, from its Trail Mountain mine. In September 1992, ARCO sold Trail Mountain to PacifiCorp, but continued to fulfill its contractual obligation to Nevada Power from its Utah stockpile and through local purchases. However, between 1993 and 1997, ARCO fulfilled the major portion of its obligation from its West Elk mine in Colorado. During 1998, Nevada Power started purchasing coal from Cyprus Plateau's Willow Creek Mine. These purchases continued throughout 1999 though on a smaller scale due to a mine fire

in the Willowcreek mine.

North Valmy Plant

The two units of Sierra Pacific Power Company's North Valmy plant (jointly owned with Idaho Power Company) have a combined generation capacity of 521 MW and require about 1.45 million tons of coal per year. In 1999, Utah coal shipments to the North Valmy plant totaled 1.6 million tons, which matched the 1998 levels. Sierra Pacific did not purchase any coal from Black Butte Coal Company near Rock Springs, Wyoming as they did in previous years.

In 1999, North Valmy's two units burned 1.55 million tons of coal to generate 3,485 GWh of net electricity. During 2000, this plant is expected to consume 1.53 million tons and generate just under 4,000 GWh of net electricity.

Pinon Pine Power Plant

In September, 1991, the Department of Energy's Clean Coal Technology Programs (CCTP) identified nine projects for future development. One such project is the Pinon Pine Power plant, a 107 MW electric generation plant located at Sierra Pacific Power Co.'s Tracy Station, located 17 miles east of Reno, Nevada.

The project's main objective is to demonstrate commercial feasibility of a low-Btu gas combustion turbine fed by an air-blown, pressurized, fluidized-bed Integrated Gasification Combined Cycle (IGCC). During August 1992 the DOE and

Sierra Pacific Power Co. (SPPC) signed a cooperative agreement to carry out the project. The DOE and SPPC provided the required funding of \$308 million on an equal basis.

The core of the project is a fully conventional combined-cycle power plant capable of operation on natural gas. The M.W. Kellogg Co. provided the technology for this advanced IGCC. The company used a Kellogg Rust Westinghouse (KRW) version of the World War II vintage coal gasification technology.

The project's Environmental Impact Statement (EIS) was completed on November 8, 1994, and construction began in February 1995. In 1996, the power plant was completed and the unit went into commercial operation in December of that year.

The coal gasifier, completed in early 1997, converts coal into clean burning gas to be consumed in a General Electric combustion turbine. This unit will operate for the next four years as a demonstration unit and the cost of fuel and operation will be shared equally by the DOE and SPPC.

The unit's net design efficiency is about 40.7 percent, equivalent to a heat rate of 8,390 Btu/kWh, and is the most efficient coal-based unit in the country. Because the fuel produced by the gasifier is cleaned, the amount of NO_x and SO₂ is reduced by over 90 percent.

After this fuel is burned in the gas turbine to generate electricity, the excess heat is used to produce steam which is then used in a steam turbine generator to produce more electricity.

The unit's advanced design boosts efficiency by 20 percent over that of conventional power generators, a process which results in 25 percent less CO₂ emission for the generation of the same amount of electricity. This unit also uses 20 percent less water to generate the same amount of electricity as conventional generators, which makes it a very desirable unit in the arid region of the American West.

The IGCC is designed to consume different grades of coal. On a regular basis, central Utah operators will supply the required coal, which could amount to 320,000 tons per year. At times other coal, specifically high-sulfur coal from the Midwest, may be consumed to evaluate the technology's potential application elsewhere in the U.S. or abroad. This unit's fuel flexibility allows it to use natural gas, coal or any combination of the two for maximum fuel cost savings. The unit's other advantage is its ability to generate electricity by consuming only natural gas when the gasifier is down for repair or maintenance.

During 1996 the coal purchased for this unit was minimal and for 1997 it was just over 10,000 tons; however, the plant operated only on natural

gas during the entire year. This plant used very little coal in 1998 and the final streamlining of the gasifier was complete by the end of 1999.

California

About 0.92 million tons of Utah coal went to cogeneration facilities in California. The electric utility market for Utah coal in California presently includes six coal-fired cogeneration units.

Stockton California Plant

Stockton, California is the site of the first coal-fired cogeneration facility ever to burn Utah coal. This unit is operated by Air Products & Chemicals, Inc. and began commercial operation in March 1988. This 49.9 MW unit is capable of consuming 220,000 tons of coal per year to generate about 425 GWh of net electricity.

In 1999, this plant purchased 156,600 tons of coal, all of which came from Utah. The plant consumed 140,400 tons of coal to generate a total of 505 GWh of gross or 456 GWh of net electricity. Just under 37 GWh of the electricity and all of the steam by-product were used by an adjacent corn wet milling plant owned by Corn Product Co. International. Pacific Gas and Electric Co. (PG&E) purchased the remaining 419 GWh. During 2000, this plant will purchase 141,000 tons of coal and is planning to generate 450 GWh of net electricity, most of which will be sold to PG&E.

Mt. Poso Field - West Plant

In May 1989, a second coal-fired cogeneration facility was commissioned. It is owned by Mt. Poso Cogeneration Co., a consortium of Ahlstrom Development Corp., Pacific Generation Co. and Bechtel Enterprises, Inc. This 49.9 MW plant is located in the San Joaquin Valley and is operated by Pyropacific Operating Company and Pacific Generation Company. During 1999, Mt. Poso purchased 110,000 tons of Utah coal, and burned the same amount to generate 312 GWh of gross or 285 GWh of net electricity that was sold to the Pacific Gas & Electric (PG&E).

This was a marked improvement over last year's purchase of 83,000 tons of coal and consumption of 33,000 tons. The operations in the Mt. Poso Field-West used the steam by-product for enhanced oil recovery. During 2000, this unit will consume 157,000 tons of coal to generate 411 GWh of net electricity.

ACE Plant

The largest coal-fired cogeneration facility in California, with 96 MW of installed electric generation capacity, is owned by ACE Cogeneration Co., which is in turn owned by Ahlstrom Development Corp., Constellation Holding, Inc. and the Kerr McGee Chemical Company. This unit is located in Trona, California and started operation in September 1990. North American Chemical Company's two soda ash plants adjacent to the ACE plant use

the steam by-product. This unit has the capacity to burn 300,000 to 350,000 tons of coal per year to generate between 650 to 750 GWh of electricity. During 1999, the firm purchased 374,000 tons of Utah coal and burned 389,000 tons to generate 866 GWh of gross electric generation. Southern California Edison Co. purchased the net 799 GWh of electricity. This unit is expected to burn about the same amount of coal during 2000.

Rio Bravo Plants

Ultra Power, Constellation and Hadson are the owners of a twin cogeneration plant, comprised of two 38.5 MW units located in Bakersfield (Rio Bravo Poso and Rio Bravo Jasmin). Construction of this twin plant started in December 1987 and was completed in March 1990. The plant started commercial operation in September 1989 and came on-line early in 1990.

During 1999, Rio Bravo Poso purchased 72,000 tons of Utah coal, burning about the same amount to generate 297 GWh of gross or 288 GWh of net electricity, which was ultimately sold to PG&E. The Rio Bravo organization used the steam by-product in its oil field for enhanced oil recovery (EOR) operations. During 2000, this plant will consume 62,000 tons of coal and will generate 256 GWh of gross electricity.

Rio Bravo Jasmin purchased 74,000 tons of Utah coal and burned the same amount to generate 309 GWh of gross or 278 GWh of net electricity which

was sold to Southern California Edison. Rio Bravo oil field also used the steam by-product of this unit for EOR operations. During 2000, this plant is expected to purchase and burn about 62,000 tons of Utah coal, and generate close to 252 GWh of net electricity.

Energy Factor Plant

The Energy Factor plant is a cogeneration facility located in Stockton, California. This 45 MW cogeneration plant was first bought by Sithe Energy in 1990 and then sold to a partnership of National Power Company and ESI in 1993. ESI, a wholly owned subsidiary of Florida Power Company, originally backed only this transaction, but later decided to take a more active role in the plant's daily operation. This plant is now operating under the name of Port of Stockton District Energy Facility (POSDEF) Power Company L.P. The steam by-product from this plant goes to three processing facilities within the same industrial complex: California Cedar Products Company, which manufactures cedar wood products including Dura Flame logs and Cargill and Liquid Sugar, both of which import raw sugar from Hawaii and manufacture various food products for human and animal consumption. This cogeneration unit requires up to 200,000 tons of coal per year. The coal supply contract for this company is with Oxbow Carbon and Minerals, Inc. of Colorado (previously known as Pacific Basin Resources). During 1999, this company purchased

130,000 tons of coal, all of which came from Utah. This unit consumed 112,000 tons of coal to generate 350 GWh of gross electricity with 290 GWh net generation sold to PG&E. For the foreseeable future, it is likely that all of the requirement of this unit will be supplied solely by Utah.

Shipments of coal for consumption by electric power plants in Nevada are expected to increase by 2.5 percent from the 1999 level to 3.62 million tons in 2000.

During 1993, the amount of coal sold to electric utilities within the U.S. excluding Utah, Nevada and California - the main users of Utah coal - nearly doubled from 556,000 to 1.09 million tons. During 1994, this consumption reached 1.71 million tons, more than 200 percent over 1992 and about 60 percent over 1993 levels. In 1995, this consumption shot up to 3.4 million tons, which was almost twice that of 1994. In 1996 this consuming sector surpassed 3.90 million tons, an increase of nearly 15 percent over 1995, but in 1997 this consumption decreased to 2.44 million tons. During 1998 Utah had an increase of more than 40 percent to 3.44 million tons, but in 1999 it went down to 2.47 million tons. States receiving electric utility coal from Utah includes: Tennessee (1.20 million tons), Illinois (0.87 million tons), Oregon (287,000 tons), Missouri (89,000 tons), and Kentucky (22,000 tons). During 2000, this consumption should

decrease by 13 percent from 2.47 million tons to 2.20 million tons, mostly due to smaller shipments of coal to Illinois. Because of this decrease, Utah coal distributed to all other states for electricity generation is expected to decrease from 6.9 million tons in 1999 to 6.7 million tons in 2000.

Utah Markets

Utah coal consumed in Utah to generate electricity amounted to nearly 13.01 million tons in 1999, which exceeded expectations. Utah coal shipped to electric utility plants was 13.16 million tons.

Hunter Plants

PacifiCorp's Hunter units (I, II, and III), with availability of 84.96 percent and utilized availability of 97.75 percent, consumed 4.228 million tons of coal mostly from PacifiCorp's Cottonwood/Trail Mountain mine and some from its Deer Creek mine to generate 9,494 GWh of net electricity. During 2000, this plant should be working at about 98.1 percent capacity factor consuming 4.626 million tons of coal to generate 10,240 GWh of net electricity which would be about 7.9 percent above 1999.

Huntington Plants

Huntington's Units (I and II), with plant availability of about 91.63 percent and utilized availability of 99.27 percent, consumed 2.96 million tons of coal produced from PacifiCorp's Deer Creek mine to generate 7,131 GWh of net electricity. During 2000, this plant should be working at 90.50 percent

availability and 98.90 percent utilized availability consuming 2.99 million tons of coal to generate 6,848 GWh of net electricity. This will be just four percent below the 1999 generation level.

Carbon Plant

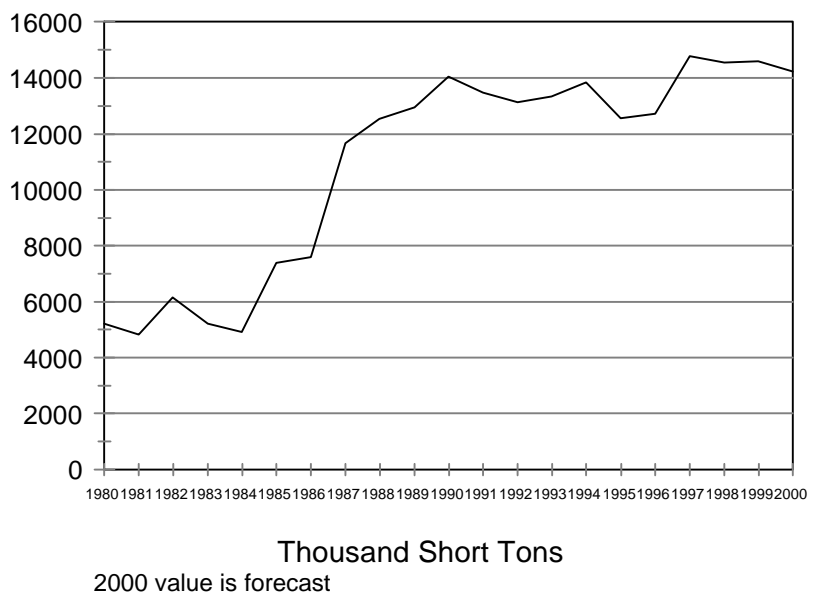
The Carbon plant, with availability of 82.68 percent and utilized availability of 96.27 percent, consumed more than 552,000 tons of coal to generate 1,220 GWh of electricity. Nearly all the coal consumed in this plant was purchased from the Genwal Coal Company. During 2000, this plant should be working at 87.5 percent availability and 96.34 percent utilized availability consuming 615,000 tons of coal to generate 1,321 GWh of net electricity. It is very likely that the capacity factor for PacifiCorp's three plants could be as much as two percent

higher in 2000 than in 1999, and coal consumption could increase from 7.74 to 8.23 million tons. In 2000, coal production for distribution to Utah electric utilities is likely to be less than the increase in consumption, which means that stockpiles would decrease to some extent.

IPP Plants

In 1999, the Intermountain Power plant (IPP), of the Intermountain Power Agency (IPA), operated with an availability of 94.08 percent. The plant's two units, with a total nameplate capacity of 1,640 MW, burned 5.27 million tons of coal to generate 13,211 GWh of net electricity for the state of California. During 2000, this plant will burn approximately 4.93 million tons of coal to generate 11,967 GWh of electricity, nearly all of which will be

Distribution of Coal to Utah Electric Utilities



sold outside of Utah. All of this coal may not come from Utah as there are indications that negotiations on coal purchase contracts with producers in Colorado had occurred during 1998 and 1999. The higher availability of hydropower in the Northwest at times causes a decrease in coal burned during the spring and summer runoff. There is no indication that the runoff in 2000 would be greater than that of 1999.

Bonanza Plant

During 1999, Deseret Generation and Transmission's (DG&T) Bonanza plant with a rated peak capacity of 420 MW, achieved an availability of 97.8 percent and a load factor of 85.7 percent. This plant consumed about 1.6 million tons of coal to generate 3,170 GWh of net electricity. DG&T purchased 1.43 million tons of coal from the Deserado mine, located just 36 miles east of the Bonanza plant in Colorado and 167,000 tons of coal from Utah coal operators. During 2000 the availability will decrease to 83 percent, and the capacity factor to 81 percent coal consumed will equal 1.66 million tons, resulting in 3,128 GWh of electricity generation.

UTAH COKING COAL MARKETS

The market for coking coal in Utah is limited to Geneva Steel Company's operations in Vineyard, Utah, which is the only integrated steel mill operating west of the Mississippi River. Located 45 miles south of Salt Lake City, the firm manufactures hot-rolled steel

plate, sheet, and pipe for markets primarily in the western and central U.S. Geneva's customers include service centers, distributors, steel processors and various end users which include: manufacturers of welded tubing; highway guardrail; storage tanks; railcars; ships; and agricultural and industrial equipment. In recent years, Geneva has undergone an extensive modernization program intended to enhance its competitive position by reducing operating costs, expanding product lines, improving quality and significantly increasing throughput capacity. With these improvements, Geneva Steel strengthened its position as a low-cost steel producer while becoming one of the industry's more environmentally advanced steel mills. The company acquired the steel mill and related facilities in a leveraged buy-out from USX Corporation in August 1987. Coal purchased by Geneva Steel to make coke totaled 0.728 million tons during 1999. The plant consumed about the same amount of coal to make coke for steel production.

As Geneva Steel improved its blast furnace productivity, coke making at the plant fell short of iron production demand. During 1998, Geneva overcame this constraint by directly purchasing 185,000 tons of coke from China, in addition to its own manufactured supply, to produce about 2.0 million tons of raw steel. To meet its requirement of low- to mid-volatile hard coking coal, Geneva Steel

negotiated long term contracts with eastern producers and a multi-year transportation contract with the Union Pacific railroad.

During 1999, Geneva bought 79,000 tons of low-volatile Pennsylvania coking coal from Cooney Brothers Coal Company of Cresson, Pennsylvania. In addition, Geneva bought 250,000 tons of high-volatile Colorado coking coal from the Sanborn Creek mine of Oxbow Carbon and Mineral, Inc. (previously known as Pacific Basin Resources) of Littleton, Colorado. This coal is from the same seam as the coal Geneva purchased from Bear Coal Company, Inc. of Somerset, Colorado during the early 1990s.

Geneva also bought and consumed 59,000 tons of mid-volatile Virginia coking coal from Knox Creek Coal Company situated just west of Richlands, which is on highway 460 and 19 in Russell County in the toe of Virginia near Graceland railroad station. This company is part of the United Coal Company.

Furthermore, Geneva purchased 149,000 tons of high quality West Virginia coking coal from Commonwealth Coal Company's War Eagle mine situated just west of Balt which is on county road 99 about 15 miles due west from Beckley in the south western part of West Virginia and 17,000 tons from Fire Creek mine. In addition, Geneva obtained 36,000 tons of high quality West Virginia coking coal from Power Mountain mine

of Nicholas Energy which is part of Massy Coal Company. The Power Mountain mine – named with reference to its location – is the same as the Spartan Eagle mine – which had a reference to the coal seam mined.

Geneva also purchased 138,000 tons of mid volatile coal from Fording Coal Company's Fording Eagle mine located in the southeast corner of British Columbia just 70 miles across the border.

During 2000, Geneva will purchase about one million tons of coal and 250,000 tons of coke from China to produce 2.5 million tons of raw steel.

OTHER INDUSTRIAL COAL MARKETS

Out-of-state Markets

Since 1989, when shipments of coal to other states for industrial consumption peaked at 2.4 million tons, consumption for this market sector has been declining, reaching only 2 million tons in 1992. During 1993, shipments increased for the first time in four years and in 1994 this trend continued as six operators shipped 2.32 million tons of industrial coal to ten states outside Utah. In 1995, there was a slight increase to 2.4 million tons but in 1996 this consumption decreased slightly to 2.34 million tons and in 1997 there was a further decrease to 2.16 million tons. During 1998 this consumption hit an all time high of 2.75 million tons, but in 1999 it pulled back to 2.53 million tons. The largest recipient of industrial coal was

California's chemical and cement manufacturing plants with more than 73.9 percent of all industrial coal shipped from Utah. Nevada received 336,000 tons for use mainly in cement plants. This level was 16 percent greater than the 287,000 tons consumed in the previous year. Shipments to Oregon amounted to 144,000 tons. Arizona shipments ranked fourth with 79,000 tons followed by Washington which purchased 47,000 tons. There was a shipment of 28,000 tons to Wyoming and Idaho's purchases amounted to 23,000 tons. Lastly, Colorado purchased only 2,000 tons. In total, out-of-state industrial con-

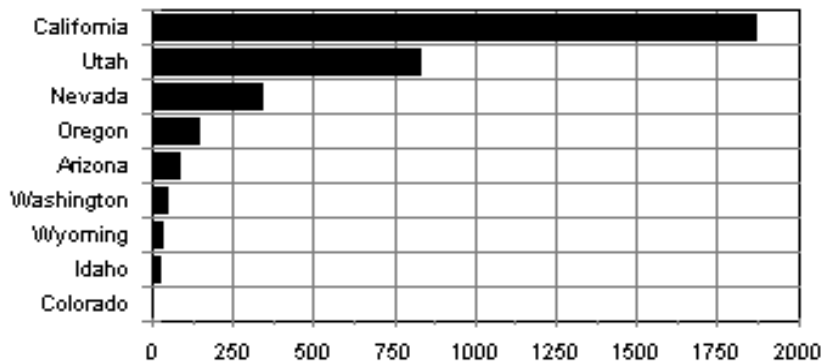
Copper consumed more than 53.7 percent of the total to generate electricity.

Kennecott Copper

During 1999, Kennecott purchased 445,000 tons of Utah coal and consumed 461,000 tons, along with 3.7 billion cubic feet of natural gas, to generate 918 GWh of gross electricity or 844 GWh of net electricity. The coal purchase in 1999 increased by more than 3 percent in comparison with the previous year's figure.

In 2000, Kennecott's coal-fired electric generation will jump 12 percent. Total coal consumption will amount to 473,000 tons.

1999 Distribution of Utah Industrial Coal by State
Thousand Short Tons



sumption should decrease slightly to 2.45 million tons in 2000.

Utah Markets

In 1999, industrial consumption of coal in Utah increased by 24.5 percent to 830,000 tons from 680,000 tons the previous year. Kennecott

Cement Manufacturers

Prior to 1995, Utah's cement manufacturers suspected increasing demand, due to the growth of the housing industry, and began to expand their production capacity. Production capacity also increased due to the I-15 reconstruction project and various other state and county road expansions. Both

Holnam and Ashgrove started to increase production prior to and during 1996 and by 1997 were producing considerably more cement. During 1998 both had reached the highest level of production and by 1999 they were producing at full capacity. Together they consumed 179,000 tons of Utah coal during 1999.

Holnam

The Devil's Slide plant of Ideal Basic Industries, Inc., a leading cement producer based in Denver, Colorado, has been a part of Holnam since 1986. A series of mergers and acquisitions established Holnam, Inc., as one of the largest cement companies in North America. Dundee Cement Co., Santee Cement Co., Northwestern States Portland Cement Co., Ideal Basic Industries and United Cement Co. have all been brought together under the Holnam banner. Holderbank controls 89.3 percent of Holnam's common stock and, in the consolidation process, Holderbank's share in St. Lawrence cement was brought into Holnam, which now holds a 60 percent interest in St. Lawrence.

In 1986 Holderbank acquired a 66 percent interest in Ideal Basic Industries, Inc., which had encountered some financial difficulties and required financial restructuring. The nine-plant Ideal Basic system fit in well with the Dundee Cement Co. system, offering new markets to the West, Southwest, and Mid-Central regions of the U.S. The whole establishment, comprised of 19 cement plants

and 113 distribution terminals in most U.S. states and three provinces of Canada, is now referred to as Holnam.

The Devil's Slide plant switched from Wyoming coal to natural gas in 1991 and continued to burn natural gas until August 1992. In that year, the price of natural gas increased and coal consumption became more economical. During the remainder of 1992, the Devil's Slide plant used 27,000 tons of coal. A significant event occurred when this plant converted from natural gas to coal; it did not automatically switch to Wyoming coal as it had in the past but, instead, started using Utah coal.

During 1993, the Devil's Slide plant purchased 60,000 tons of coal, 40,000 tons of which came from Utah and the remainder from Wyoming. In 1994 the plant's purchase of Utah coal increased to 59,000 tons; while purchasing only 4,000 tons of additional coal from Wyoming. By 1995 the plant purchased only Utah coal (25,000 tons) and used 30,600 tons of coal in total. Some of this coal came from the stockpile and was used with natural gas for summer use and treaded tires and diaper plastics (materials obtained from the Kimberly Clarke plant in Ogden) to produce 351,000 tons of cement. In 1996 this plant purchased and consumed 29,000 tons of Utah coal plus some natural gas, tires from Salt Lake Treading Co., and more diaper plastics to produce

350,000 tons of cement. During most of 1997, Devil's Slide plant purchased 26,000 tons of Utah Coal which was consumed in the old plant along with 0.623 billion cubic feet of natural gas as well as 6,100 tons of tires and 4,200 tons of diaper plastics to produce 243,000 tons of clinkers. On November 11, 1997, the new plant commenced operations and did not consume any coal but consumed 0.2 billion cubic feet of natural gas along with 700 tons of tires and 900 tons of plastic to produce 46,000 tons of clinkers to the end of the year. In 1998 the plant purchased 57,000 tons of coal and burned 56,000 tons along with 292 million cubic feet of natural gas, more than 4,000 tons of tires and 6,000 tons of plastic material to produce 544,000 tons of clinkers. During 1999 Devil's Slide plant purchased 66,000 tons of coal and consumed the same amount along with 127 million cubic feet of natural gas, more than 10,000 tons of tires and 5,800 tons of plastic material to produce 641,000 tons of clinkers.

For 2000 this plant will purchase and burn more than 60,000 tons of Utah coal to produce well over 619,000 tons of clinker. Some natural gas (180 million cubic feet) will also be consumed along with similar amount of treaded tires and diaper plastics.

Ashgrove Cement

During 1996 Ashgrove Cement expanded operations to increase clinker production by 20-

25 percent. The project actually started in 1995 and was completed in the early fourth quarter of 1996. Incorporation of the project into the operation took place in May and June of 1996 when the total clinker producing operation was shut down. During the remainder of 1996 and early 1997 Ashgrove solved the expansion problems but the production did not reach the intended target until June 1997 when Ashgrove decided to increase the capacity of the main fan. Ashgrove also added a 30,000 ton cement silo for more storage capacity. Throughout 1997 additional changes were made improving the clinker production capacity.

With completion of a new waste oil refining unit north of Salt Lake City, the economics of burning waste oil are now unfavorable. Further changes in the configuration of the clinker production system has also made using tires more difficult. During 1999 Ashgrove purchased 113,000 tons of coal, and burned almost the same amount, in addition to 14,000 gallons of diesel fuel, to produce 808,000 tons of clinkers which went into making 842,000 tons of cement. This cement plant is now at peak of production and should remain at this level of production and coal consumption for the foreseeable future.

Several industrial firms, ranging from Geneva Steel to lime plant operations, purchased nearly 206,000 tons of coal. Industrial coal consumption in Utah should remain

around 700,000 tons per year for at least the next two years.

RESIDENTIAL AND COMMERCIAL COAL MARKETS

Out-Of-State Markets

Since the mid-1980s, when consumption stabilized at about 300,000 tons per year, demand for residential and commercial coal has been on the decline. By 1990, it stood at only 59,000 tons. In 1991, sales to the residential and commercial sector increased to 76,000 tons and in 1992, to 81,000 tons. During 1993, out-of-state consumption jumped by 63 percent to 134,000 tons; by 1994, this sector consumed 308,000 tons. This unusual increase was due mainly to consumption of 193,000 tons by Illinois, which did not buy any Utah coal in 1995. This consumption decreased to 51,000 tons in 1996, its lowest ever, though increasing to 60,000 tons in 1997. By 1998 this sector increased to 82,000 tons and stood at 75,000 tons in 1999. Idaho, Missouri and Washington bought larger quantities. In contrast, Nevada and Colorado purchased a relatively small amount (See Appendix, Table 6). Consumption by the residential and commercial sectors in these states will probably remain stable in the short term, though with some fluctuations. For 2000, a ten percent increase is very likely.

Utah Markets

During 1999, residential and commercial coal consumption in

Utah decreased by 50 percent to 107,000 tons. With the exception of 1997, this level of consumption was by far the lowest in the past 10 years.

In some counties such as Emery, Wayne, Millard, Juab, Sanpete, Sevier and Carbon approximately 15 to 20 percent of homes are heated with coal. In comparison, the Wasatch Front counties of Salt Lake, Utah, Weber and Davis consume very little coal for home heating. Commercial consumption of coal for space heating in Davis, Weber and Salt Lake counties is also low.

There are two elements that affect residential and commercial consumption: environmental standards set by various air quality control agencies and the cost of fuel. When the price of natural gas is low there is a strong tendency on the part of the residential and commercial sectors to consume more natural gas but, as the price of natural gas increases, the less expensive coal becomes more attractive in spite of environmental considerations. Utah coal producers might not see an increase in consumption of Utah coal by residential and commercial markets unless the price of natural gas increases again. For 2000, coal consumption will increase to one of the highest levels of the past decade within the state of Utah as the price of natural gas goes up, but could remain the same or slightly increase in states outside of Utah, resulting in higher total consumption than in 1999.

Coal Imports

Utah imports coal for coking applications and coal-fired power generation in Uintah County. There are no imports bound for the industrial, residential, or commercial sectors. In 1999, companies operating in Utah imported 2.2 million tons of coal.

Utah previously imported low to mid-volatile hard coking coal to mix with its own high volatile coking coal for the Geneva Steel Mill. Since February of 1994, when the coal supply contract between Geneva and Sunnyside Reclamation and Salvage Company expired, Utah has relied entirely on out-of-state coking coal and coke for steel production, thus accounting for the major increase in the amount of imported coal to Utah. Imports of industrial coal to Utah were used primarily at Holnam's Devil's Slide plant located in Morgan near the Wyoming border. However, this plant's consumption is now being met by Utah coal, and further imports were ceased in favor of Utah coal. The only other coal imports to Utah are about 1.7 million tons of electric utility coal used in DG&T's Bonanza plant.

The Bonanza plant purchased 1.43 million tons of coal from the Deserado mine in Colorado for its 1999 electric generation, along with 167,000 tons of coal from Utah operators. In 2000, imports will increase to 2.66 million tons as Bonanza continues its higher level of electric generation, and

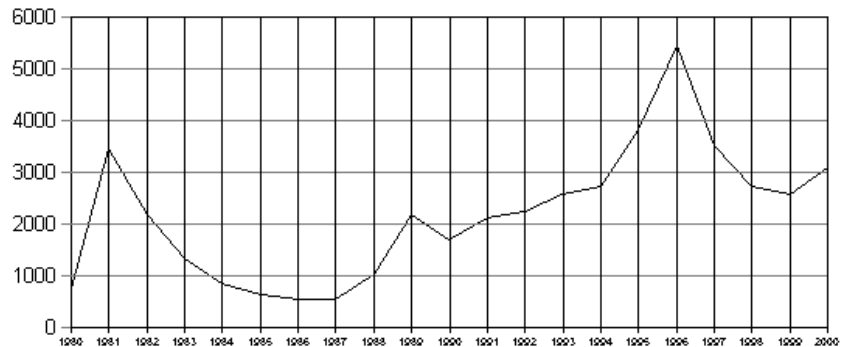
Geneva Steel's coal imports rises to one million tons.

The Devil's Slide plant purchased a little more than 9,000 tons of Wyoming coal when it switched from natural gas during the second half of 1992. During 1994, this plant purchased 4,000 tons of industrial coal from Wyoming. During the 1995-99 period it did not pur-

chase any out-of-state at all. Furthermore, Holnam is not expected to purchase any Wyoming coal in 2000.

cost, low sulfur and high Btu coal is closer to West Coast ports for shipment to Pacific Rim countries than any other U.S. coal source. In the past U.S. coal exceeded the cost of other coals in the Pacific Rim region, despite offering several quality advantages such as high Btu and low sulfur content. In addition to the coal quality, U.S. coal producers are considered

Utah Coal Exports to Pacific Rim Countries
Thousand Short Tons



chase any out-of-state at all. Furthermore, Holnam is not expected to purchase any Wyoming coal in 2000.

There is no indication that coal will be imported into Utah for use by the residential and commercial sector in 2000. Altogether, the imports of coal into Utah are expected to increase to 2.66 million tons in 2000 from 2.16 million tons in 1999.

OVERSEAS EXPORTS

During 1999 exports fell to 2.57 million tons, to about one half of the 1996 export level.

Utah is uniquely situated in the coal export market. Its low

the most reliable, an attribute of Utah's coal that Pacific Rim countries value very highly.

The cost of production and price of Utah coal steadily decreased over the past decade, largely due to increased productivity. As a result, Utah coal became nearly as competitive on a price-per-million Btu basis as coal produced in other countries. By 1995, Utah coal became quite competitive with Australian and other coals in the Pacific Rim. In 1996 the price of coal stayed relatively flat in the Pacific Rim market; indeed, a \$0.10 drop per ton of coal did not have a significant effect.

During 1997 Pacific Rim consumers managed to extract a \$2.50 per ton concession from the Australian producers. Utah coal producers were hoping to keep their concession below the \$1.00 level but were not totally successful in that endeavor. The level of concession ultimately matched the average of what the Australian coal producers agreed to and what Utah coal producers were hoping to give.

While the Pacific Rim market was one of the fastest growing markets in the world prior to

1997, the financial problems which surfaced during 1997 signaled a downturn in consumption and therefore the generation of electricity. This trend continued during 1998 and Utah's exports to the Pacific Rim was also down 22 percent from the previous year.

During 1999, the Australian dollar was devalued further with respect to the American dollar and since all the coal contracts are written in American dollars the Australian miners start

receiving much higher numbers of now devalued Australian dollars than before. This allowed them to give much greater discounts and still get more Australian dollars for their coal than before, which put the Utah coal operators in a greater competitive disadvantage and the coal exports slipped further.

For 2000 this market should show some sign of strengthening and the export level of Utah coal to Pacific Rim could increase by a half million tons.

Activities of Utah Coal Operators

PacifiCorp Energy West

Energy West Mining Co. experienced a successful year in 1999 achieving a total production of 7,716,598 tons of coal from the Deer Creek and Trail Mountain mines. Each mine utilized one longwall production section and two continuous miner development sections. The Deer Creek Mine produced 3,830,745 tons from the northern portion of the East Mountain Property known as the North Rilde Canyon area. The production from the Trail Mountain mine was from the last remaining federal leases within that property to contain reserves. The production from the Trail Mountain Mine totaled 3,885,853 tons in 1999.

Each of the mines produced coal with relatively low ash throughout the year. As a result, the preparation plant at the Hunter Power plant was not used other than as a coal blending facility. All of the coal produced was consumed in the PacifiCorp owned Huntington, Hunter and Carbon stream fired power plants.

On November 30, 1999, less than one year from when the merger was first announced on December 7, 1998, the merger between Scottish Power and PacifiCorp was completed. PacifiCorp will continue to operate as a subsidiary of Scottish Power. Energy West Mining Company continues to operate as a subsidiary of PacifiCorp.

On April 12, 2000, PacifiCorp announced the closure of the Trail Mountain mine scheduled for the fall of 2001. This will result in the reduction of approximately 200 employees affiliated with the mine. The closure of the mine is due to the depletion of reserves and is not related to the merger between PacifiCorp and Scottish Power. Following the closure of the Trail Mountain mine, the Hunter Power plant will receive fuel from the Deer Creek mine and other Utah mines.

Canyon Fuel Company, LLC

Coal from Utah's mines continues as an important fuel source for power generation by electric utilities. Utah coals are used extensively for kiln fuels at both cement and lime plants. Additionally, they are the primary fuel source for several cogeneration plants in California, as well as for power generation for private use by mining companies in a variety of mining activities. Coal use in each of those applications, while not experiencing significant growth, has remained constant and provides the base for Utah coal production. Conversely, export and specialty or sized coal demand continue to diminish and falter. Nevertheless, Canyon Fuel Company, LLC (CFC) participates extensively in supplying coal to all of these coal use sectors.

Last year's report noted that, following the opening of the

Dugout Canyon Mine in 1998, CFC planned to use 1999 to prepare the mine for installation of a longwall. While the mining activities at Dugout during 1999 proceeded with a longwall installation in mind, the actual installation of the longwall will be postponed for at least one year until mid-2001. As the supply of and demand for Utah coal becomes clearer in the coming months, the actual start-up date for a longwall at Dugout will become clearer.

Also, as reported last year, CFC's Sufco mine was the successful and sole bidder for the BLM's May 1999 lease sale for the 60 million ton Pines Lease Tract. Securing the Pines Lease was a critical step for the long-term viability of Sufco and it is now an integral part of the mine's production plans. Development of the first longwall panel in this tract began in late 1999 and will continue throughout 2000 and well into 2001. Mining of the first longwall panel in this lease will begin in 2001, with completion of that panel expected in early December of 2002. The Pines Lease will provide most of Sufco's coal production for the next several years.

Finally, in recent months PacifiCorp announced the imminent closure of the Trail Mountain mine. In conjunction with that announcement, Arch Coal, Inc. and PacifiCorp announced a new long-term coal

supply agreement between the parties for CFC to supply substantial quantities of coal to the Hunter Power Plant. Initially, test coal will be shipped in late 2000 with volumes stepping up substantially in late 2001 to replace the Trail Mountain coal deliveries, as that mine closes. Expect further reports on this new agreement in the future.

Lodestar Energy Inc., White Oak Mine

In 1999, White Oak produced 494,000 tons of clean coal from its No. 2 mine. Coal was shipped to Eastern and Western customers as well as to the export market. The coal was produced from the Upper O'Conner seam out of the No. 2 mine.

During May 1998, White Oak closed the White Oak No. 1 mine and the operation was shifted back to the No. 2 mine in June, 1998. Production continued from that mine to the year's end. White Oak, subsequent to obtaining a lease modification in 1997, submitted a request to the Division of Oil, Gas and Mining for the inclusion of the newly obtained lease in the permitted area. In late 1998 White Oak considered it prudent to put up its Utah coal assets for sale. On July 16, 1999, Lodestar Energy Inc. of Lexington, Kentucky with an annual production of 10 million tons mostly from mines in West Virginia and Kentucky purchased all the assets of White Oak Mining and Construction Company in Utah including the Horizon mine and some interest that the Japanese coal traders held in the oper-

ation. The Lodestar will be the owner and the operating company for both White Oak and Horizon but the mines would be referred to as the White Oak No. 1 and No. 2 and Horizon mines.

Horizon Mine

Horizon Mining, LLC was formed in August 1997 to operate the Horizon Mine which is located in Consumers Canyon near the site of the old mining operations of the Blue Blaze and National mines. Horizon continued operation and developed first north main, however, it encountered large amounts of water infiltration which necessitated halting coal production. Horizon then rehabilitated the Blue Blaze mine to the southwest which was uphill from the Horizon mine. Development to the southwest was temporarily stopped. During 1999, Horizon produced 46,000 tons of coal. Horizon ceased coal production operation in March 1999 and it has not reopened yet. All the mine assets, reserves and leases were sold to Lodestar Energy on July 16, 1999. Production from the Horizon mine is expected to restart in late 2000.

Andalex Resources, Inc.

Andalex concentrated its effort in 1999 on production of coal from the Aberdeen mine and the new Westridge mine. Westridge began production of coal in October of 1999.

The Pinnacle mine produced for several months during 1999 and the Apex mine is sealed. All of Andalex's effort was directed toward production from the

Aberdeen mine which at this time is under 2,400 to 2,700 feet of cover. Development of gate roads and mains is now complete in the Aberdeen mine. A longwall working two shifts per day was used to produce the main bulk of coal in 1999. Andalex's production in 1999 amounted to 1.6 million tons of coal. In March of 1999, the longwall was moved to panel #5. This panel contains slightly more than two million tons of coal and the longwall will need moving again in September of 2000. Wildcat loadout had a throughput of more than 3.5 million tons including 1.5 million tons from Genwal. Andalex accomplished all that with a work force of 120 including several part-time and student workers. By the end of 1999 Andalex was down to 108 total employees.

The Westridge mine project which is co-owned by Andalex and IPA is on schedule. The 8.5 mile road to the mine site has been completed and is paved. The work for surface drainage facilities is nearly finished with only the bath house, shop and office to complete. Mining began in October of 1999. The surface facilities should be completed by this fall. The in-pile system and truck loadout is finished. The actual longwall operation is expected to begin in early 2001.

Genwal Resources, Inc.

The Crandall Canyon mine, operated by Genwal Resources, Inc., experienced its first full production year in 1998 after pur-

chasing a new longwall and expanding the surface facilities in 1997. During 1999 Genwal coal produced 3.79 million tons of coal, compared to 3.52 million tons in 1998. Production comes from a longwall unit and two continuous miner units. One miner unit develops the gate entries for the longwall, and the other develops the main entries and sets up the gate roads.

In 1999, Genwal Resources, Inc., with a roster of hard working and dedicated employees, helped Genwal to be one of the safest and highest productivity mines in the nation. The accident incident rate for 1999 was very low versus the industry rate of 11.77. Productivity topped 120 tons per man day for 1999.

For 2000, Genwal has set goals to continue its success in the coal industry. Genwal's existing production capability will guarantee safety, high productivity, and maximum recovery of reserves.

Co-op Mining Company

Co-op Mining Company was started in 1940 and has operated continuously for the past 59 years. Co-op is an independent coal producer of lower sulfur, high Btu coal and operates in the Bear Canyon near Huntington, Utah. Annual production in the last several years has been 400,000 to 500,000 tons per year but increased to 880,000 in 1999 and is expected to do the same in 2000. Co-op's marketing has been directed at industrial consumers, households and Utah & Nevada utilities, with additional

tonnage sold to the Midwestern market east of the Mississippi.

Co-op controls in excess of 30 million tons of coal reserves consisting of private, fee and federal coal, of which approximately 75 percent of the reserves are private and fee coal. The reserves are located east and west of Bear Canyon though current mining operations are west of Bear Canyon.

There are three minable seams on the property. These include the Tank, Blind Canyon, and Hiawatha Seams. The Tank Seam is the top seam, the Blind Canyon Seam the middle, and the Hiawatha Seam the bottom. Co-op is presently mining in the Tank Seam. Seam thickness varies between 12' - 20' in the Blind Canyon, 5' - 9' in the Hiawatha and 8' - 10' in the Tank Seam. Bear Canyon mine operates continuous miners and shuttle cars, and has the capability to run three sections. Currently two sections are in operation. Present mining equipment would allow production of up to 1 million tons per year.

A modern screening facility, which allows participation in the industrial market for oil treated stoker and household coal, has been installed at the mine site. Co-op has the ability to ship unit-train shipments of up to 120 cars. The facility is designed to load 100 cars in less than 2 hours.

Cyprus Mining Corporation

Plateau Mining continued to produce coal from its two Utah

operations in 1999. Both the Star Point No. 2 mine and the Willow Creek mine produced a high quality steam coal product for the western United States and Pacific Rim export markets. Plateau Mining was purchased from Cyprus Amax Minerals Company by RAG American Coal Holding Inc.

The Star Point operation, located in the Wasatch Plateau Coal Field, produced 1.05 million tons from two continuous miner sections in the Middle Seam. All production was shipped raw. In February, 2000, with the exhaustion of mineable reserves, the decision was made to idle the Star Point mine prior to final closure.

Following the November, 1998 fire at Willow Creek mine, the longwall equipment was recovered in mid November, 1999 and longwall production in the D Seam resumed on December 4, 1999. Approximately 500,000 tons of coal were produced in entry development during the year. An integrated program of geotechnical monitoring involving seismic, stress tomograms, shield leg pressures, and BPC and convergence stations was also initiated during the latter part of the year.

A gob vent borehole network of surface holes was completed on the next three longwall panels in 1999 to establish additional ventilation capacity for the developing gob. These holes have shown themselves to be very effective in removing accumulating methane gas from the underground works. Horizontal drilling

Coal Leasing Activity in Utah

to investigate the feasibility of underground collection of methane was also initiated. Methane powered blowers have been installed on each activated hole.

Coal Leasing Activity in Utah

Genwal Coal Co.

On February 4, 1993, Genwal Coal Company, which is now a 50/50 subsidiary of Intermountain Power Agency (IPA) and Andalex Resources, filed an LBA for 4,051 acres of federal coal leases covering all or parts of sections 1, 10, 11, 12, 13, 14 and 15 of Township 16S and Range 6E and sections 6, 7 and 8 of Township 16S and Range 7E, called Mill Fork Canyon, on land adjoining its presently operating mine and the previously purchased LBA. Since there was some unleased federal coal east and south of Genwal's application area that should have been added to the LBA to avoid a bypass situation, the Tract Delineation Team considered it prudent to add these areas to the tract being offered for auction. Originally Genwal did not include this area in its LBA because of the quality of coal, seam thickness and possible environmental concerns associated with hydrology and escarpment protection existing in the area. Studies conducted by the Forest Service in years previous to the submission of the application concluded that the aforementioned land could be leased. The environmental analysis for the tract based on the presently available information will determine the feasibility of leasing the delineated tract. The final delineated tract contained 6,442.82 acres covering all or parts of sections 1, 10, 11, 12, 13, 14, 15, 22, 23 and 24 of Township 16S and Range 6E and sections 4, 5, 6, 7, 8, 9 and 18 of

Township 16S and Range 7E, containing 58.7 million tons of recoverable coal in the Blind Canyon Seam and the Hiawatha Seam.

This tract, which was part of the land exchange agreement unveiled on May 8, 1998 by Secretary of the Interior Bruce Babbitt and Utah Governor Michael Leavitt, went out for bid on March 30, 1999. Even though Andalex was the nominating party and submitted a bid of \$18.2 million corresponding to about \$0.31 per ton, the lease was sold to Utah Power (PacifiCorp Electric Operation), which was the highest bidder with an offer of \$25.2 million corresponding to \$0.43 per ton.

This tract is accessible from Deer Creek mine and only through a rock tunnel which could prove to be cumbersome and costly. The coal quality of this tract is still unknown and may not be of the same high standard as of those of other parts of the Wasatch Plateau Coal Field.

Genwal Coal Company filed for an LBA on June 6, 2000 for 880 acres of federal coal lease property in all or parts of sections 4, 5, 8 and 9 of Township 16S and Range 7E containing some 8 million tons of recoverable coal. This tract is called Little Bear Canyon which is located to the south of Crandall Canyon. This tract was originally being considered as part of the Mill Fork Canyon tract, but, due to lack of availability of adequate information about the tract at the

time it was decided to leave it out of the Mill Fork Canyon tract.

PacifiCorp Electric Operations

PacifiCorp Electric Operations (Utah Power) of Salt Lake City submitted an LBA on February 26, 1991, for 7,864 acres in the North Trail Mountain/Cottonwood Creek area of Wasatch Plateau coal field in Emery County covering all or parts of sections 2, 3, 4, 9, 10, 11, 14, 15, 16, 21, 22, 23, 24, 25, 26, 27, 28, 29, 32 and 33 of Township 17S and Range 6E. This application is in full conformity with responsible and prudent coal operation.

In reviewing this LBA the Tract Delineation Team noted some areas where adjustments could be made in the tract configuration. The western edge of the tract in some areas was identified by the Forest Service in their forest plan as being unsuitable for coal leasing because of the need to protect the escarpment along Joe's Valley. However, they recommended the inclusion of additional land to fill the gap left between the LBA and their existing leases. As a result the recommended tract by the Tract Delineation Team the Cottonwood Canyon Tract shall include all or parts of sections 2, 3, 4, 9, 10, 11, 12, 13, 14, 15, 16, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 32 and 33 in Township 17S Range 6E, in total 9,243.87 acres containing 75 million tons of recoverable coal. The two areas of concern prior to going out to bid would be the termination of the area of surface

disturbance which has to be resolved with the Forest Service and the inherent problem of being near a reservoir (in this case Joe's Valley) which has to be resolved with the Bureau of Reclamation. It is likely that it will take four years for these technical problems to be resolved. The State Institutional Trust Lands Administration (SITLA) does not consider it to be likely for this tract to be offered for lease prior to 2005.

Canyon Fuel Company, LLC

On December 16, 1996, Canyon Fuel filed for an LBA covering an area of 5,858 acres of federal coal leases named "the Pines" in the Wasatch Plateau coal field. The requested lease contains some 50 million tons of coal existing in all or parts of sections 35 and 36 of Township 20S and Range 5E, and sections 1, 2, 3, 10, 11, 12, 13, 14, 15, 22, 23, 24, 25 and 26 of Township 21S and Range 5E. Delineation of the tract which was completed contained 60 million tons of recoverable coal in all or part of Section 35 and 36 of Township 20S and Range 5E, Sections 1, 2, 10, 11, 15, 22, 23, 25 and 26 of Township 21S and Range 5E and Sections 19 and 20 of Township 21S and Range 6E. This lease went out for bid on April 15, 1999. The sole bidder was Canyon Fuel which submitted a bid of \$13.3 million corresponding to about \$0.22 per recoverable ton of coal. This bid was rejected by the BLM since it did not meet the fair market value of the coal as determined by the BLM. Five weeks later, on May 20, 1999, another sale for the same tract was held with Canyon Fuel being the sole bidder again. The \$16.9

million bid which corresponded to \$0.282 per ton was accepted by the BLM.

Also, in 1998, Canyon Fuel Company LLC submitted an LBA for 2,692 acres of federal land containing about 36 million tons of recoverable coal known as the Flat Canyon Tract. The lease covers all or parts of Sections 21, 28 and 33 of Township 13S, Range 6E and all of Sections 4 and 5 of Township 14S Range 6E. Delineation for this tract was completed by end of June 1999 and work on National Environmental Policy Act (NEPA) compliance was started. The technical study for this tract is being conducted by Norwest. The EIS which is being prepared by the BLM and FS should be ready by early 2001 and the tract will then be offered for sale.

Andalex Resources, Inc.

During March of 1997 Andalex Resources purchased B Canyon coal reserve from BP America, a British Petroleum subsidiary, and started the process of permitting the mine. Andalex plans to have the mine producing coal later this year from a longwall operation which should be producing at a minimum rate of 3 million tons per year. B Canyon reserve (renamed Westridge) should increase Andalex's reserve of recoverable coal by at least 40 million tons.

AMCA Coal Company, the leasing agent for Andalex Resources, filed for an LBA in July 1997 for 1,603 acres of federal coal lease property existing in all or parts of sections 1, 3 and 12 of Township 14S and Range 13E, and sections 6, 7 and 18 of

Township 14S and Range 14E, and section 35 of Township 13S and Range 13E, containing some 10 million tons of recoverable coal. This LBA which was called Whitmore Canyon and later was renamed Westridge, is adjacent to the above mentioned lease. The BLM is now collecting baseline data and consulting with Andalex to find the best way to accomplish NEPA compliance. The sale of this tract is still in the distant future.

On May 20, 1998 Andalex Resources Inc. submitted its final version of emergency lease by application for 462.73 acres of federal land by the name of Summit Creek Tract. This land is contiguous with an existing federal lease held by Andalex covering all or parts of Sections 29, 30, 31 and 32 of Township 12S and Range 11E. This LBA was withdrawn by Andalex in early 1999.

In December, 1999, SITLA made a public declaration of its readiness to offer its portion of the Dugout Canyon tract for lease. This tract consists of 2,360 acres of land covering all or parts of sections 17, 19, 20, 21, 38, 29 and 30 of Township 13S and Range 13E containing 12.2 million tons of recoverable coal. Canyon Fuel coal company is the most likely candidate to make an offer for this lease, however, to date, no offer has been made.

North Horn Tract

The North Horn Tract that has considerable tonnage of reserve has not been delineated and is not ready to be offered for lease. However, there have been a few

Outlook for Utah's Coal Industry

inquiries about the tract and a few coal operators have shown some interest in this tract.

FORECAST FOR 2000

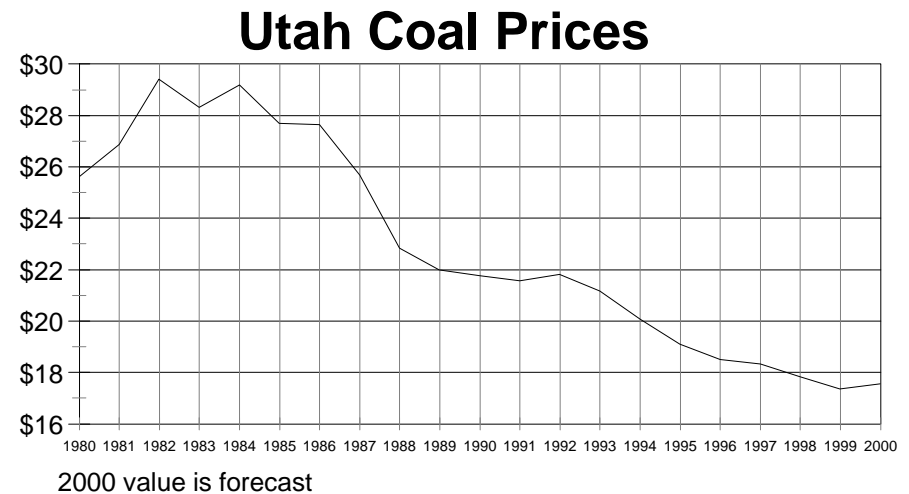
Prices

Over the past 15 years, coal prices in Utah have declined. In 1984 Utah coal, on average, sold for \$29.20 per ton. During 1999, the same coal sold for \$17.36 per ton. This represents a decrease of 40 percent in current dollars, but a decrease of almost 62 percent on a constant dollar basis. Again, on a constant dollar basis, the comparison is even greater with 1976 prices when coal sold for more than 300 percent of the 1999 price. In other words, the decrease was more than 68.6 percent.

From 1990 to 1993, average prices have fluctuated around \$21 per ton and hit a new low of \$20.07 in 1994. In 1995, another new low was established at \$19.11 then another one in 1996 at \$18.50 followed by yet another one at \$18.34 in 1997 further still by another one at \$17.83 in 1998, and finally still another low in 1999 at \$17.36. Even though this appears to be a decline in coal prices, in reality, it is not.

The increase in sales occurred mostly in markets which were at the lower end of the price scale while some reduction of delivery occurred in markets which were at the upper end of

the price scale. This, therefore, further reduced to \$15.25 in the



indicates a possible "bottoming out." In the near term, the average price will most likely remain stable. For 2000, the average price of coal will probably be about \$17.57 per ton.

The average spot price of coal stood at \$14.33 during 1996, having fluctuated between \$13.50 and \$15.07, then started to rise during the first quarter of 1997, and ended the year at \$16.63 per short ton for an average value of \$16.51. During 1998, spot prices stayed around \$16.63 and finished the second quarter of 1999 at the same level. During the third quarter of 1999 the spot price dropped down to \$16.00 and it was

fourth quarter of 1999. During the first two quarters of 2000 it stayed at \$15.12.

During 2000 Utah coal production will likely decrease by 0.6 million tons, from 26.5 to 25.9 million tons. This could lead to some firming of the spot prices, though it is unlikely to go above \$15.35 per ton.

Skyline production could decrease by more than 18 percent. White Oak's production could experience considerable increase and Horizon mine could increase production by more than 100 percent.

Soldier Canyon mine would continue its standby status as production from the Dugout Canyon mine decreases consid-

erably. Andalex also should experience a moderate decrease in production, while Westridge Coal Company starts operation. Co-op's production should remain unchanged while Plateau and Sufco will increase production. Genwal's production will level off and may even decrease to some extent.

The current dollar prices could experience a slight upward change. However, the price of coal as measured in constant dollars is expected to continue to fall for a longer period. In other words, even though the average dollar price per ton will start to accelerate the rate of increase should not exceed that of inflation.

Utah's spot coal price changes are not only a function of demand changes or Utah's coal supply but also a function of the availability of coal in the neighboring states, more importantly Colorado. Just as much as Cyprus' Twenty Mile mine production problems contributed to the tightening of Utah's spot prices in 1996, an existence of over supply in Colorado could play a part in softening the spot price of Utah coal.

It is important to bear in mind that Utah's coal prices are also influenced by the world price of coal. The correlation may not be high, but the existence of a strong influence cannot be denied. During 1996 world coal prices remained relatively flat but started to fall off in 1997. Coal operators in Utah agreed to a concession of one-dollar-plus per ton. In 1998

there was another concession of about one dollar per ton of coal exported to the Pacific Rim countries of Japan and Korea. However, the contract with Tai-power may be such that the concession made to Japanese coal importers would not affect it materially. Other countries such as Australia and South Africa gave concessions ranging up to \$3.00 per tonne (metric ton).

During 1999, there was a further concession given by Australian operators while Utah's concession was small.

Though export prices for Utah producers were not a determining factor in overall coal prices, and the sale takes place on marginal production, it should be realized that as the amount and the percentage of the exported coal relative to total production increases, the effect of the export price on the average price of coal becomes more relevant. However, over the past two years the level of exports as well as the percentage of the production has been on the decline, which means the export prices had less influence on the actual price of coal.

Other factors also tend to soften prices. Technological developments in coal production and handling continue to lower the break-even point for production and to reduce prices overall. Large volume production allows operators to reduce profit margin per ton by lowering prices and still keep overall profits high. The abundance of coal supply on the

international market will continue to exert pressure on Utah producers to keep prices competitive.

World recoverable coal reserves stand at 1.118 trillion tons. World production and consumption is around 5 billion tons per year implying that, at the present rate of consumption, the world has an adequate supply for the next 224 years. This, of course, is based on the recoverable reserves that are known and reported at this time. There are many coal reserves that remain undiscovered and some that are discovered but not reported or are under reported.

There is also some question about the "recoverable" fraction of the recoverable reserves. By "recoverable" we refer to resources that we can mine efficiently with today's technology. However, future technology may allow a greater percent of the resource to be recovered, hence a much greater recoverable reserve.

The rate of consumption also directly affects the remaining number of years of supply. As the world's population increases the demand for energy, including coal, will increase. As developing countries with high growth rates expand and add energy-intensive industries, the demand for energy and coal will increase in tandem. Presumably, at the same time, new technologies will help us achieve much greater efficiency in our energy conversion. Today, on average, we burn 10,080 Btu (0.84 lb. of 12,000 Btu per pound of coal) to

generate 1 kWh of electricity which has 3,413 Btu. In other words, in the process of conversion we lose 6,667 Btu or 66.1 percent and end up with 33.9 percent of the energy used. Sierra Pacific's Pinon Pine Power Project is now operating at about 40 percent efficiency. By the end of this decade, many of our energy conversion units will have a heat rate of 6,800 Btu/kWh or slightly more than 50 percent efficiency. This, in reality, means that by the end of this decade we should be able to use the same amount of coal to generate 50 percent more electricity than we do today, implying that our reserve-to-production ratio will increase, thus extending the life of our reserves. This leads to the conclusion that the world has a vast coal reserve and this supply overhang will ultimately keep the supply up and the price down.

On the other hand, there are also other forces acting to raise coal prices, specifically western coal. From January of this year the second phase of the Clean Air Act Amendments of 1990 went into effect. We could experience a renewed wave of interest in low sulfur coal throughout the country. The Utah coal market should see some tightening during the summer and as we move into fall. Utah's coal production, now at the upper percentage of capacity, should respond to the greater demand by showing some firming up in the price of coal.

Production

Utah coal production for 2000 will be about 25.9 million tons, still at above the 25 million tons per year level and among the highest levels of production in the industry's 131-year of recorded history. Three factors will account for sustaining this high level of production: 1) strong demand for steam coal consumption by the electric utilities in Utah; 2) greater level of exports; and 3) increased industrial consumption of the coal in the west.

Electric utilities in the west as well as electric utilities in the Utah will continue using greater amounts of Utah coal in the future. In 2000, shipments of coal to electric utilities in the west will increase slightly while shipments to the east will go down by as much as 13 percent. In addition, shipment to Pacific Rim countries will increase after the second full year of operation of the \$200 million expansion of the Port of Los Angeles Dry Bulk Terminal.

Distribution

During 2000, distribution of Utah coal most probably will surpass 26.0 million tons while production will be at 25.9 million tons. Distribution of electric utility coal to out-of-state customers will decrease by as much as 0.2 million tons from 6.9 to 6.7 million tons.

On January 1, 1995, TVA and White Oak Mining and Construction Company, Inc. signed a ten year contract for annual delivery of 1.5 million tons. Another 10-year coal contract for delivery of 0.5 million

tons per year was signed on the same date between TVA and Genwal Coal Company. This was the first time in a decade that Utah coal started to flow to electric utilities in the east on a long term basis even though numerous spot sales had been made to that sector of the country.

This 2 million tons of additional coal through 2005 was a boost to Utah's coal production. It will lead to more jobs in Utah's coal industry as well as many indirect jobs in local communities. In addition to TVA, Utah now has two companies sending coal to two electric utilities in Illinois. Our forecast for this decade shows that electric utility coal going east should be above 4 million tons per year.

Distribution of Utah coal to electric utilities within the state should show very little year-to-year change, unless new facilities are built or some of the older units are retired. Currently, there is no indication that either will happen. Older units experience more down-time due to maintenance and repair, so on the basis of this reasoning a slight decrease in distribution may be expected; on the other hand, companies could increase their electric generation marginally by ramping up their operation. As a combined result, of these two factors a slight increase in consumption is expected. The only unit that could materially affect electric utility coal consumption within the state is Intermountain Power Agency's IPP plant. During years with higher precipitation in

the Pacific Northwest, more hydropower becomes available at costs below those of coal. This will, to some extent, curtail the operation of IPP units resulting in less consumption of Utah coal. For 2000, this unit will purchase and burn 340,000 tons less than it did in 1999. PacifiCorp distribution will increase by just over 0.2 million tons while the consumption of coal and generation of electricity at the plants increases slightly. DG&T's Bonanza plant is not forecasted to use any Utah coal in 2000 but it is not totally ruled out. During this decade, the electric utility sector's consumption of Utah coal within the state should increase from 13.1 in 1999 to close to 14.0 million tons per year.

Distribution of Utah industrial coal outside the state during 2000 will increase from 2.53 to 3.16 million tons with consumption within the state increasing from 0.83 to 1.09 million tons, however, in the future consumption of industrial coal outside of the state should increase. This trend should continue throughout this decade.

Distribution to the residential

and commercial sector will also increase during 2000. However, any future movement in this consuming sector is ultimately tied to the price of natural gas. Some commercial operations may begin switching from natural gas to coal which should result in increased consumption. With the price of natural gas passing \$4.00 per million Btu this consuming sector should experience some increase.

Finally, in the export market during 2000, distribution will increase by about 20 percent, or .525 million tons to 3.09 million tons. The forecast for this consuming sector for this decade is above 4.5 million tons per year.

The general outlook for Utah's coal industry is bright despite some coal operators having moved their operations to other states, sold, or otherwise disposed of their Utah coal properties. Still we have seen a number of companies expand operation and double in size within a span of three or four years. Many companies have applied for new federal coal leases, indicating continuing interest in Utah's coal reserves. During 1996 two mines opened

up while three mines closed. In 1997 four mines opened up and one mine closed, During 1998, one mine opened and one mine closed. And finally during 1999, Dugout Canyon mine replacing Soldier Canyon mine and Westridge mine opening up is likely the beginning of many more mines opening in Utah coal fields as some of the older mines curtail operation or relocate to new locations.

Coal production in Utah has enjoyed steady growth since the mid-1980s and has more than doubled in size within the past decade. Despite coal prices that have declined steadily for a decade and a half, coal production in Utah has increased. This is indicative of a strong and healthy coal industry.

In 2000, all consuming coal sectors within and outside of Utah are expected to have a strong showing. The coal contracts with eastern utilities should add permanence to electric utility consumption outside of Utah. The forecast of total production for the latter part of this decade is about 31 million tons.

Federal, Legislative, and Other Issues

Devaluation of Currency

During the decade of 1970 and into the 1980s (until 1983), the Australian dollar had a higher value than the American dollar. For the following four years the Australian dollar fell precipitously in value and hit a new low of 1.49 Australian dollars to American dollars. The next two years (1987-88) witnessed some strengthening in the value of the Australian currency and for the following eight years (1988-1996) the value of the Australian dollar fluctuated moderately from year to year but stayed virtually unchanged at 1.28 Australian dollars to American dollars (see accompanying table and graph).

During this period (1990 - 1996), Utah coal exports grew from 1.7

million ton per year to 5.5 million ton per year (see Appendix Table 1).

From 1996 to 1998 the value of the Australian dollar fell more than 20 percent with respect to American dollars. Realizing the fact that all the currency used in coal contracts in the Pacific Rim and for that matter in the most of the rest of the world is in American dollars, in 1998 the Australian coal operators could take home 25 percent more in their devalued dollars than they did two years earlier. This increase in take home pay allowed the Australian coal operators much more room to discount their prices and compete more vigorously with the Utah coal operators. Utah coal exports to the Pacific Rim fell from 5.5 million tons in 1996 to 3.5 million tons in 1997 then again to 2.7 million tons in 1998 and finally to 2.5 million tons in

1999. Comparing the decrease in the value of the Australian dollar with that of Utah coal exports to Pacific Rim countries a high degree of interaction can be observed.

Mercury Content of Coal

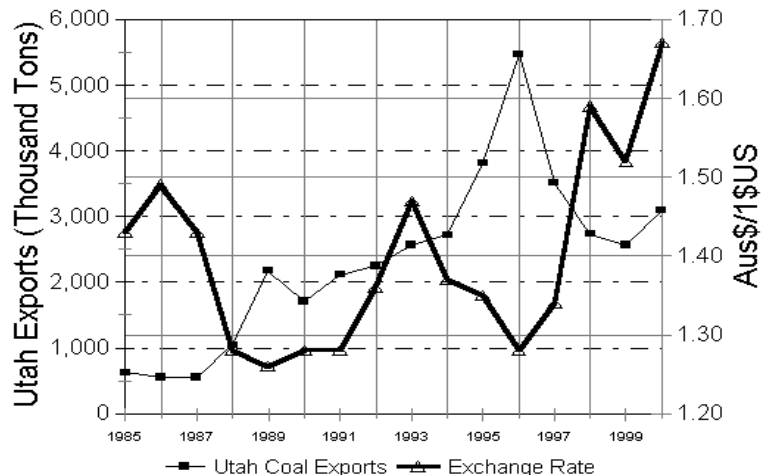
The second phase of the 1990 Clean Air Act Amendment went into effect on January 1, 2000. Some electric utility companies have already contracted for lower sulfur coal and some are counting on the purchase of emission allowances. But, as more companies try to overcome their emission violations by purchasing emission allowances the price of an allowance could go up and could make it less expensive to buy low sulfur coal as is found in Utah.

Utah coal has other advantages than just low sulfur. The high Btu coal of Utah emits as much as 12 percent less

Utah Coal Exports and the Exchange Rate of Australian Currency

	Utah Exports Thousand Tons	Exchange \$AUS / 1\$US
1985	625	1.43
1986	551	1.49
1987	555	1.43
1988	1,044	1.28
1989	2,175	1.26
1990	1,708	1.28
1991	2,112	1.28
1992	2,245	1.36
1993	2,567	1.47
1994	2,717	1.37
1995	3,811	1.35
1996	5,468	1.28
1997	3,513	1.34
1998	2,735	1.59
1999	2,567	1.52
2000	3,092	1.67

Effect of Australian Currency Rate on Utah Exports to Pacific Rim



carbon dioxide per generated useful Btu (kilowatt-hour of electricity) than other low Btu coals.

There are also smaller amounts of harmful chemicals emitted from Utah coal per kilowatt-hour of electricity generated — one of these chemicals is methyl mercury. So far, emission of mercury has not been regulated but there is a good indication of its being regulated within the next few years. This is where Utah coal could prove to be valuable.

The US Geological Survey is now initiating a study concerning the determination of the level of emissions of mercury when coal is burned. One of the scientists of the Utah Geological Survey has already been approached to head the study for the western states.

There are good indications that the study would confirm the existence of lower levels of mercury emissions from Utah coal when burned to generate electricity. This should bode well for Utah coal if the new mercury emission control caps the emissions per unit of electricity generated rather than a generic percentage reduction on all emissions.

Los Angeles Export Terminal, Inc.

Los Angeles Export Terminal, Inc. ("LAXT") was incorporated in 1993 and opened its \$200 million plus facility for the export of coal and petroleum coke in November, 1997. This unique privately held corporation, with 35 shareholders

representing both American and Japanese interests, is located in California at the Port of Los Angeles. All shareholders are associated with the coal export chain and are producers, shippers, financial institutions, Japanese trading houses, constructors or end users and consumers. This new and environmentally sensitive state-of-the-art facility is capable of exporting approximately 9 million metric tons of coal and 1.8 million metric tons of petroleum coke annually. The LAXT facility is capable of loading a standard Panamax vessel within one day and loading a Cape-sized vessel within two days under normal conditions. LAXT's berth is designed to accommodate 250,000 DWT vessels and is dredged to 72 feet. LAXT, arguably the most technologically sophisticated coal terminal in the world, provides coal producers in the western U.S., in particular Utah, with a gateway to the Pacific Rim.

The LAXT facilities are operated under two separate operating agreements, the Terminal Operating Agreement and the Stevedoring Services Agreement. The terminal operator, Savage Pacific Services, responsible for managing and operating the receipt and storage of coal and petroleum coke, has its corporate offices in Salt Lake City, Utah. Kinder Morgan Bulk terminals, Inc. is responsible for managing and operating the shiploading facility at the berth.

LAXT has completed its first full fiscal year (July 1, 1998

through June 30, 1999) handling the export of approximately 2.4 million metric tons of coal and approximately 1.6 million metric tons of petroleum coke. Although these numbers reflect the current market conditions in the Pacific Rim, it is anticipated that the volume of export for the 1999-2000 fiscal year will increase moderately at the LAXT facility.

Utah Schools and Land Exchange Act of 1998

Public Law 105-335

The land exchange agreement which was unveiled on May 8, 1998 by Secretary of the Interior Bruce Babbitt and Utah Governor Michael Leavitt was indeed a long awaited one. It was, no doubt, the designation of the Grand Staircase - Escalante National Monument by President Clinton on September 18, 1996 that gave the additional impetus to culminate this long-awaited federal government/ state land exchange.

This agreement encompasses the exchange of state land, tribal land, federal land, mineral rights on state land, tribal land, federal land as well as royalties on minerals and lump sum payment in cash. As part of the exchange the federal government will receive:

- \$177,956.72 acres of surface and mineral state holdings and an additional 24,001.03 acres of mineral-only properties captured within the Grand Staircase - Escalante National Monument;

- 69,688.93 acres of surface and mineral property captured in Arches National Park, Capitol Reef National Park, Dinosaur National Monument, Glen Canyon National Recreation Area, and Flaming Gorge National Recreation Area;
- 45,241 acres of surface and mineral properties captured in the Navajo and Goshute Indian Reservation;
- 70,106.71 acres of surface and mineral property captured within Wasatch - Cache National Forest, Sawtooth National Forest, Ashley National Forest, Uintah National Forest, Manti-La Sal National Forest, Fishlake National Forest, Dixie National Forest, and Desert Range Experimental Station; and,
- Four tracts in the Alton Coal Field tracts previously designated unsuitable for mining (these lands are already accounted for in the Grand Staircase - Escalante National Monument acreage totals) for a total of 366,095 acres of land plus an additional mineral rights covering 66,479.27 acres.

The state of Utah on behalf of trust lands administration will receive:

- \$50 million in cash;
- \$13 million (1998 dollars) payable out of the federal share of royalties from future coal sales at the Cottonwood Coal tract;
- 597.76 acres (surface and

minerals) at the Blue Mountain telecommunications site in Uintah County

- 2,998.63 acres (surface and minerals) in and around the Beaver Mountain Ski Resort;
- 1,920.00 acres (surface and minerals) at the Warner Valley tract, acquired primarily for surface development;
- 34,248.30 acres (surface and minerals) at the Big Water tract, acquired primarily for surface development;
- 12,797.50 acres (surface and minerals) at the Hatch tract, acquired primarily for surface development;
- 58,608.65 acres (surface and minerals) at the Ferron tract, containing an estimated 2 billion tons of in-place coal resource and 185 billion cubic of recoverable coal bed methane gas;
- 881.01 acres (surface and minerals) at the West Ridge tract, containing an estimated 4 million tons of recoverable coal;
- 2,228.96 acres (surface and minerals) at the Millar County tract, containing valuable limestone resources;
- 4,004.30 acres (surface and minerals) at the Duchesne County tract, containing speculative oil and gas potential;
- 2,600.76 acres (surface and minerals) at the Uintah County No. 1 and No. 2 tracts, containing speculative tar sands deposits;

• 5,562.82 acres (mineral only) at the Mill Fork tract, this property will revert to federal control after 22.3 million tons of coal are produced and sold from the tract;

• 9,597.02 acres (mineral only) at the North Horn tract, this property will revert to federal control after 100 million tons of coal are produced and sold from the tract; and,

• 5,113.84 acres (mineral only) at the Muddy and Dugout Canyon tract which will revert to federal control after 34 million tons of coal are produced and sold from the tracts.

Grand Total: \$63 million, 120,885.87 acres of developable surface and mineral lands in addition to 20,273.68 acres of known mineral-only properties.

In addition to the surface real estate development potential of the acquired lands, the properties are estimated to contain in excess of 185 billion cubic feet of recoverable coalbed methane, 160 million tons of recoverable coal, in-place coal resources in excess of 2 billion tons, valuable limestone resources and other speculative mineral assets.

This bill was sponsored by Utah Rep. James Hanson and introduced into the House on May 12, 1998. Two of the five cosponsors were also Utah Reps. Merrill Cook and Christopher Cannon. The bill passed the house by voice vote on June 24, 1998 and was sent to the Senate. This bill was referred to

the Committee on Energy and Natural Resources on June 25, 1998 and to the Subcommittee on Forests and Public Lands on June 26, 1998. After going to the senate in September the bill was finally passed and was signed into law on Oct. 31, 1998.

Sunnyside Power Plant

Kaiser Steel Corp. as early as 1986 had plans to build a qualifying facility to utilize its coal refuse pile as was detailed in 1980 Federal Energy Regulatory Commission (FERC) order pursuant to Section 201 of the 1978 Public Utility Regulatory Policies Act (PURPA) which actively encourages small power production in the country. When in 1988 Kaiser Steel Corp. and its subsidiary Kaiser Coal Company filed for bankruptcy, Sunnyside Salvage and Reclamation Company of Boulder, Colorado was formed to acquire the Sunnyside property of Kaiser Coal Company, which it did in 1989.

Sunnyside Coal Company operated successfully until February 1994 when its coal supply contract with Geneva Steel ran out and was not renewed.

Among the assets that Sunnyside Coal acquired from Kaiser was a 10 million ton plus coal refuse pile that had been accumulated over more than half a century. This refuse pile was both an asset and a liability. If nothing was going to be done with the pile, Sunnyside Coal Company had to remove it to meet federal reclamation regu-

lation when the firm was going to stop operation. This dilemma was to some extent alleviated when the Environmental Power Corp. (EPC) of Delaware formed a Utah subsidiary by the name of Sunnyside Power Corp. to take over Kaiser's plans for qualifying facilities and Sunnyside Coal Company's refuse pile to build a facility that would generate electricity. The land that the coal refuse pile was sitting on was purchased for \$1.2 million.

After four years of planning, preparation, negotiation, capitalization and construction, Sunnyside Power Company started generation of electricity in 1993. This plant now utilizes between 300,000 to 350,000 tons of material from the refuse pile which was accumulated on the fee land and was subsequently conveyed by Kaiser Coal Company to Sunnyside Reclamation and Salvage Company. Later the land that it sits on was sold to Sunnyside Power Co.

The consumption of the refuse pile to generate electricity by an independent company as part of PURPA, which created a regulatory framework for encouraging electricity generation by renewable energy producers and cogenerators, was not considered by this office at the time as a coal operation for the following reasons:

1) It was difficult to determine when the original coal was mined and from what leases. The majority of leases which were used in mining were privately held, some were federal

leases and part of these leases bordered state leases. Therefore, it was very difficult, if not impossible to determine with any degree of accuracy from which lease the coal that was being used had come from.

2) The coal was stored on private land and not federal land.

3) The refuse pile was not directly sold as fuel to be used for a specific purpose.

4) The refuse pile was owned by Sunnyside Power Company and was consumed without changing hands to determine the price per ton of the fuel which was consumed.

5) When the land which the refuse pile sits on was purchased by Sunnyside Power Company it was not clear how much of the actual money that changed hands was for the land, how much for the refuse pile which was to be used as a fuel, or how much was for the rent of the land which was used to store the refuse pile upon thus, it became extremely difficult to put a price on the present value of the refuse pile as a fuel source.

6) The ownership of the refuse pile had changed hands. If there were any royalty to be collected it should have taken place when the land and the pile were sold by the original owner. Now that the power plant is burning the refuse pile, which it has already obtained and owns, it is difficult to collect the royalties.

7) Finally, the amount of

money that changed hands for the price of the land (\$1.2 million), if it were for the value of the refuse pile, would make it about \$.11 per ton which makes the royalty value for the refuse pile less than \$.01 per ton, something that may not be economical to assert, assess, monitor and collect a royalty on.

Coal-Based Jet Fuel

According to the result of a research conducted by the Energy Institute of Pennsylvania State University a coal-based fuel can be superior to petroleum based fuel because it can burn hotter, cleaner, safer and faster. Jet planes burning coal

based fuel can go as fast as nine times the speed of sound.

Petroleum based fuel with its straight-line hydrocarbon structure can burn well in temperatures 600 degrees Fahrenheit or less. As the speed of a jet plane increases the engine operating temperature also increases. At higher temperatures the fluid fuel becomes unstable and could cause fouling of the engine and the fuel line.

The Penn State research study that has been funded by the U.S. Air Force to the tune of \$18.4 million to date shows that

the ring-like hydrocarbon makeup of the coal-based fuel can operate well in temperatures as high as 900 degrees Fahrenheit without fouling the engine. Tests at temperatures higher than 1400 degrees Fahrenheit have also been conducted with good results.

There is a good chance that a prototype engine within the next three years may be available if the findings of this research proves favorable. Should the use of a coal based fuel in newly developed jet engines become a reality it would bode well for the coal industry.

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Table 1

Historical Production, Distribution, and Consumption of Coal in Utah
 Thousand Short Tons

YEAR	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
PRODUCTION	20,517	22,012	21,875	21,015	21,723	24,422	25,051	27,071	26,428	26,600	26,491	25,852
DISTRIBUTION	20,289	21,680	21,673	21,339	21,935	23,441	25,443	27,816	25,407	26,974	26,180	26,007
E U OUTSIDE UTAH	2,623	3,373	3,608	4,000	3,914	4,841	6,570	7,258	5,638	7,704	6,910	5,933
E U IN UTAH	12,963	14,053	13,472	13,136	13,343	13,839	12,550	12,728	14,780	14,545	14,593	14,229
C P OUTSIDE UTAH	0	0	0	0	0	0	0	0	0	0	0	0
C P IN UTAH	1,277	1,296	1,310	1,182	1,089	1,198	1,062	1,120	1,106	1,110	728	1,000
IND OUTSIDE UTAH	2,401	2,327	2,158	2,006	2,146	2,322	2,399	2,339	2,164	2,749	2,529	3,162
IND IN UTAH	810	619	624	497	614	647	642	517	665	680	830	1,089
R/C OUTSIDE UTAH	84	59	76	81	134	308	68	51	60	82	75	75
R/C IN UTAH	323	82	320	347	228	157	182	260	96	212	107	82
OVERSEAS EXPORTS	2,175	1,708	2,112	2,245	2,567	2,717	3,811	5,468	3,513	2,735	2,567	3,092
TOTAL IMPORTS	2,367	2,137	2,007	2,155	2,100	2,588	1,841	1,925	2,615	2,715	2,159	2,655
IMPORTS E U	1,400	1,449	1,310	1,517	1,501	1,495	779	805	1,509	1,733	1,431	1,655
IMPORTS C P	922	679	695	629	579	1,089	1,062	1,120	1,106	982	728	1,000
IMPORTS IND	45	7	2	9	20	4	0	0	0	0	0	0
IMPORTS R/C	0	2	0	0	0	0	0	0	0	0	0	0
COAL OPERATORS	14	13	12	12	11	10	9	9	10	0	10	10
ACTIVE MINES	20	18	16	16	15	14	13	12	15	15	14	14
EMPLOYEES	2,471	2,791	2,292	2,106	2,161	2,024	1,989	2,077	2,091	1,950	1,843	1,748
PRODUCTIVITY, T/MH	4.42	4.22	4.79	5.13	5.47	6.01	6.41	5.91	5.57	6.12	6.09	6.19
AVERAGE PRICE \$/T	22.01	21.78	21.56	21.83	21.17	20.07	19.11	18.50	18.34	17.83	17.36	17.57
TOTAL VALUE \$MM	451.6	479.4	471.6	458.8	459.9	490.2	478.7	500.8	484.7	474.2	459.8	454.1

Values for 2000 are forecast. All distributions include imports.
 EU = Electric Utilities, CP = Coke plants, IND = Industrial, R/C = Residential and Commercial

Table 2

Utah Coal Production(Net) by Coal mine,1999
 Thousand Short Tons

Company	Mines	County	Coal field	Production
Energy West	Deer Creek,	Emery	Wasatch Plateau	3,831
	Trail Mt.	Emery	Wasatch Plateau	3,886
Canyon Fuel	Skyline #1&3	Emery/Carbon	Wasatch Plateau	3,829
	Soldier Canyon	Carbon	Book Cliffs	828
	Sufco	Sevier	Wasatch Plateau	5,763
White Oak	White Oak #2	Carbon	Wasatch Plateau	494
	Horizon	Carbon	Wasatch Plateau	46
Andalex	Aberdeen	Carbon	Book Cliffs	1,610
Genwal	Crandall Canyon	Emery	Wasatch Plateau	3,787
Co-op	Bear Canyon	Emery	Wasatch Plateau	881
Cyprus Plateau	Star Point #2	Emery/Carbon	Wasatch Plateau	1,055
	Willow Creek	Carbon	Book Cliffs	481
Coval	Coval	Carbon	Book Cliffs	0
Total				26,491

Table 3

Utah Coal Production by Coal Field
Thousand Short Tons

Year	Wasatch Plateau	Book Cliffs	Emery	Sego	Coalville	Others	Total
1870-1981	166,404	234,547	5,723	2,654	4,262	2,332	415,922
1982	12,342	3,718	852	0	0	0	16,912
1983	10,173	1,568	88	0	0	0	11,829
1984	10,266	1,993	0	0	0	0	12,259
1985	9,386	2,805	640	0	0	0	12,831
1986	10,906	2,860	503	0	0	0	14,269
1987	13,871	2,348	269	0	33	0	16,521
1988	15,218	2,363	548	0	35	0	18,164
1989	17,146	2,785	586	0	0	0	20,517
1990	18,591	3,085	336	0	0	0	22,012
1991	18,934	2,941	0	0	0	0	21,875
1992	18,631	2,384	0	0	0	0	21,015
1993	19,399	2,324	0	0	0	0	21,723
1994	22,079	2,343	0	0	0	0	24,422
1995	22,631	2,420	0	0	0	0	25,051
1996	23,616	3,455	0	0	0	0	27,071
1997	22,916	3,512	0	0	0	0	26,428
1998	22,708	3,892	0	0	0	0	26,600
1999	23,572	2,919	0	0	0	0	26,491
2000	22,729	3,123	0	0	0	0	25,852
Cumulative Production	478,789	284,262	9,545	2,654	4,330	2,332	781,912

Values for 2000 are forecast and are not included in the total.

Table 4

Utah Coal Production by County
Thousand Short Tons

Year	Carbon	Emery	Sevier	Summit	Iron	Kane	Others	Total
1870-1959	211,028	49,166	4,046	4,012	521	45	2,846	271,664
1960	3,698	1,137	49	20	50	0	1	4,955
1961	3,916	1,124	47	20	52	0	0	5,159
1962	3,105	1,077	49	20	46	0	0	4,297
1963	3,493	752	47	18	48	1	0	4,359
1964	3,752	848	47	17	54	2	0	4,720
1965	3,779	1,101	61	13	36	2	0	4,992
1966	3,380	1,170	65	15	4	2	0	4,636
1967	2,971	1,113	72	13	3	2	0	4,174
1968	3,062	1,167	70	13	3	2	0	4,317
1969	3,367	1,200	72	12	4	2	0	4,657
1970	3,349	1,292	79	13	0	0	0	4,733
1971	3,347	1,097	158	12	0	12	0	4,626
1972	2,956	1,656	184	6	0	0	0	4,802
1973	2,866	2,445	339	0	0	0	0	5,650
1974	2,754	2,901	391	0	0	0	0	6,046
1975	2,984	3,126	827	0	0	0	0	6,937
1976	3,868	3,057	1,043	0	0	0	0	7,968
1977	4,390	3,107	1,337	0	0	0	4	8,838
1978	4,005	3,640	1,558	0	0	0	50	9,253
1979	5,292	5,147	1,657	0	0	0	0	12,096
1980	5,096	6,319	1,821	0	0	0	0	13,236
1981	6,123	5,609	2,076	0	0	0	0	13,808
1982	8,335	6,329	2,248	0	0	0	0	16,912
1983	4,194	5,404	2,231	0	0	0	0	11,829
1984	5,293	4,825	2,141	0	0	0	0	12,259
1985	6,518	4,516	1,797	0	0	0	0	12,831
1986	6,505	5,404	2,360	0	0	0	0	14,269
1987	7,495	6,765	2,228	33	0	0	0	16,521
1988	7,703	7,801	2,625	35	0	0	0	18,164
1989	8,927	8,531	3,059	0	0	0	0	20,517
1990	8,810	10,315	2,887	0	0	0	0	22,012
1991	5,816	12,980	3,079	0	0	0	0	21,875
1992	3,386	15,049	2,580	0	0	0	0	21,015
1993	2,642	15,528	3,553	0	0	0	0	21,723
1994	4,523	16,330	3,569	0	0	0	0	24,422
1995	3,801	17,344	3,906	0	0	0	0	25,051
1996	5,985	16,872	4,214	0	0	0	0	27,071
1997	6,956	14,533	4,939	0	0	0	0	26,428
1998	7,206	13,675	5,719	0	0	0	0	26,600
1999	4,514	16,214	5,763	0	0	0	0	26,491
2000	4,192	15,822	5,838	0	0	0	0	25,852
Cumulative	401,190	297,666	74,993	4,272	821	70	2,901	781,913

Production

Values for 2000 are forecast and are not included in the total.

Table 5

Utah Coal Production by Landownership
Thousand Short Tons

Year	Federal Land		State Land		County Land		Fee Land		Total
	Production	Percentage	Production	Percentage	Production	Percentage	Production	Percentage	
1980	8,663	65.5%	1,105	8.3%	0	0.0%	3,468	26.2%	13,236
1981	8,719	63.1%	929	6.7%	0	0.0%	4,160	30.1%	13,808
1982	10,925	64.6%	998	5.9%	0	0.0%	4,989	29.5%	16,912
1983	6,725	56.9%	419	3.5%	0	0.0%	4,685	39.6%	11,829
1984	8,096	66.0%	285	2.3%	0	0.0%	3,878	31.6%	12,259
1985	9,178	71.5%	510	4.0%	0	0.0%	3,143	24.5%	12,831
1986	11,075	77.6%	502	3.5%	0	0.0%	2,692	18.9%	14,269
1987	13,343	80.8%	488	3.0%	0	0.0%	2,690	16.3%	16,521
1988	15,887	87.5%	263	1.4%	0	0.0%	2,014	11.1%	18,164
1989	16,931	82.5%	375	1.8%	153	0.7%	3,058	14.9%	20,517
1990	17,136	77.8%	794	3.6%	606	2.8%	3,476	15.8%	22,012
1991	18,425	84.2%	942	4.3%	144	0.7%	2,364	10.8%	21,875
1992	17,760	84.5%	1,384	6.6%	136	0.6%	1,735	8.3%	21,015
1993	19,099	87.9%	1,682	7.7%	116	0.5%	826	3.8%	21,723
1994	22,537	92.3%	1,227	5.0%	243	1.0%	415	1.7%	24,422
1995	23,730	94.7%	571	2.3%	289	1.2%	461	1.8%	25,051
1996	25,996	96.0%	446	1.6%	15	0.1%	614	2.3%	27,071
1997	25,161	95.2%	339	1.3%	0	0.0%	928	3.5%	26,428
1998	24,954	93.8%	297	1.1%	37	0.1%	1,312	4.9%	26,600
1999	21,982	83.0%	3,071	11.6%	65	0.2%	1,373	5.2%	26,491
2000	22,178	85.8%	2,456	9.5%	96	0.4%	1,122	4.3%	25,852

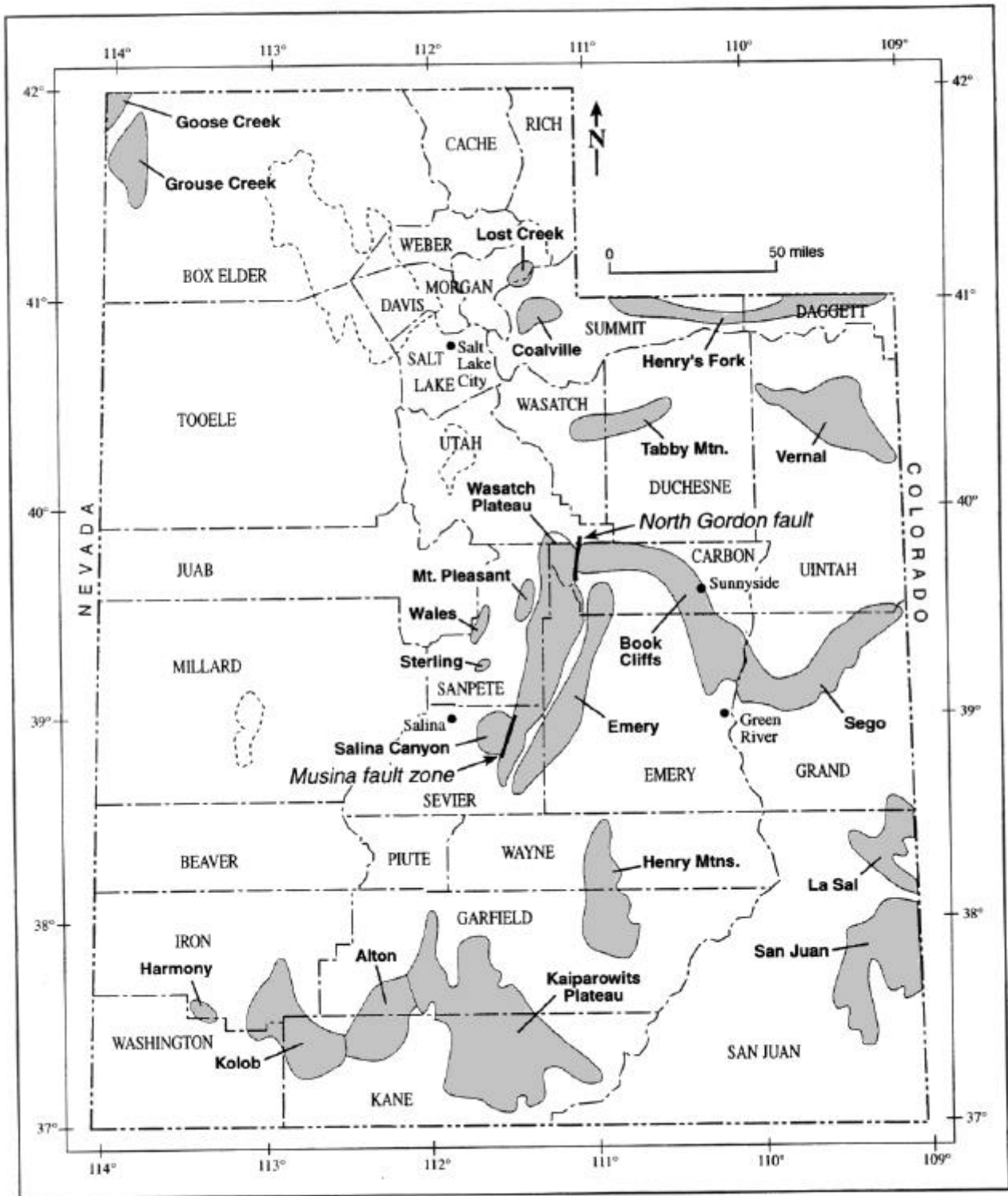
Values for 2000 are forecast.

Table 6

Distribution of Utah Coal 1999
By Destination and End-Use, Thousand Short Tons

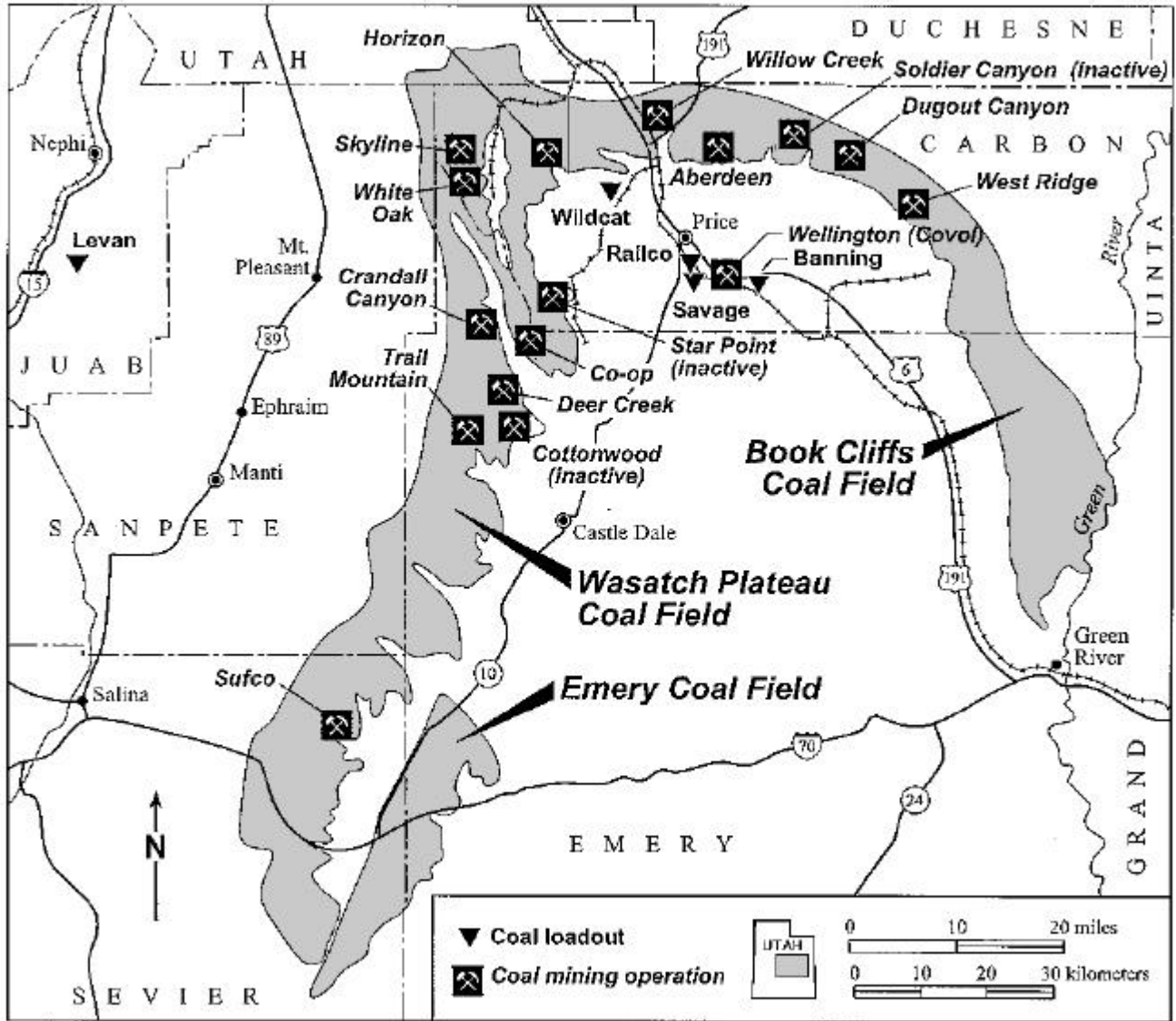
Destination	Electric Utilities	Other Industrial	Residential & Commercial	Total
Arizona	-	79	-	79
California	916	1,870	-	2,786
Colorado	-	2	1	3
Idaho	-	23	35	58
Kentucky	22	-	-	22
Illinois	870	-	-	870
Missouri	89	-	22	111
Nevada	3,529	336	2	3,867
Oregon	287	144	-	431
Tennessee	1,197	-	-	1,197
Utah	13,162	830	107	14,099
Washington	-	47	15	62
Wyoming	-	28	-	28
Pacific Rim	2,567	-	-	2,567
Total	22,639	3,359	182	26,180

Coal Fields of Utah



Map 2

Coal Mines and Load Outs of Wasatch Plateau and Book Cliffs Coal Fields





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